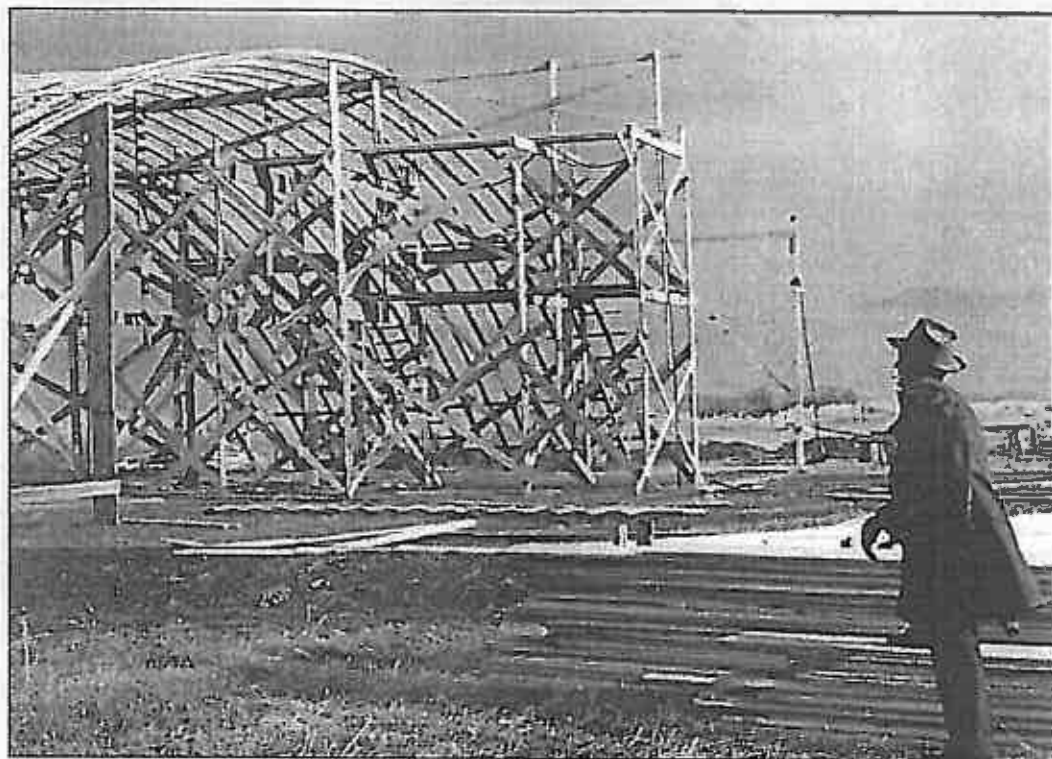


MPA

MONTANA
PRESERVATION
ALLIANCE

**Cultural Resources Mitigation Plan for
Two Historic Hangars at the
Hamilton/Ravalli County Airport,
In Ravalli County, Montana.**

FINAL



Submitted To:
Morrison-Maierle, Inc.
901 Technology Blvd.
P. O. Box 1113
Bozeman, MT 59715

Submitted By:
Montana Preservation Alliance
516 North Park, Suite A
Helena, MT 59601

May 2006

Cultural Resources Mitigation Plan for Two Historic Hangars
at the Hamilton/Ravalli County Airport,
Ravalli County, Montana.

FINAL

Prepared by:
Montana Preservation Alliance
516 North Park, Suite A
Helena, MT 59601

Prepared for:
Morrison-Maierle, Inc.
901 Technology Blvd.
P. O. Box 1113
Bozeman, MT 59715

May 2006

Cover Image: Dr. Herbert Hayward observes the 1945 construction of Hangar 2.

Report Summary

The Hamilton/Ravalli County Airport is planning a series of airport facility improvements designed to bring the complex into compliance with Federal Aviation Administration (FAA) standards. In 2004, a cultural resource survey designed to meet federal environmental regulations located historic properties, recorded as site # 24RA770. The historic properties, two early 20th century aircraft hangars, are south of the proposed new runway location on land not currently owned by Ravalli County. This parcel, however, will be purchased by the County as part of the undertaking. Due to design and safety considerations related to the proposed improvements, the historic properties cannot remain in their historic locations, creating an adverse effect to the properties that, under federal law, must be mitigated.

Montana Preservation Alliance (MPA) was contracted to develop measures to mitigate the project's adverse effects on the historic hangars, which are architecturally significant as well as significant in the aviation and women's history of the State of Montana's Bitterroot Valley. The first mitigation measure determines the structural integrity of the hangars relative to their potential for relocation. If at least one hangar is structurally sound enough for relocation, then general mitigation measures will follow a track that includes the documentation of the hangar's historic past and current structural condition, assessments of appropriate methods to relocate the hangars, and the physical relocation, stabilization, and partial structural rehabilitation of the historic hangars. If at least one hangar is determined too deteriorated for relocation, then that resource will be historically documented in a manner consistent with the National Park Service's Historic American Building Survey (HABS) standards.

Table of Contents

Project Overview	4
Regulatory Framework	4
Cultural Resources Inventory Background	6
FAA Airport Improvement Program and Recommended Mitigation	7
Cultural Setting	9
Mitigation Plan Overview	12
Recommended Cultural Resource Mitigation Measures	15
Long-term Stewardship and Use	23
Conclusion	26
Consulted Sources	27

Maps:

Map 1, Project Area and Historic Properties in Relation to the Airport and the Town of Hamilton	8
Map 2, Current Location of the Historic Hangars and Projected General Locations of the Historic Hangars	20

Appendices:

Revised Hangar Site Forms, Appendix A	
GCM Cultural Resource Inventory Report, Appendix B	
National Park Service Preservation Brief 43 Historic Structure Reports, Appendix C	
National Park Service HABS/HAER Standards, Appendix D	

Project Overview

The Hamilton/Ravalli County Airport is now accommodating aircraft which exceed the operational design limitation of the existing facility. Currently, a 200-foot wide runway to taxiway separation does not meet the minimum 240-foot wide separation established by the Federal Aviation Administration (FAA) for aircraft using the airport. A new runway will be constructed east of the current runway, allowing the current runway to be reused as a taxiway. One goal of the proposed improvements is to increase the safety for both aircraft operators and those on the ground. Other project benefits include the creation of a preventative maintenance plan for the airport's pavement system once new construction is in place, and creation of the conditions needed for the safe expansion of modern hangar facilities and aircraft parking areas.

Two historic airplane hangars are located on land that, once purchased by the airport, would become part of a 'buffer zone' along the south end of the proposed new runway. According to Morrison-Maierle, Inc. (MMI), no structures can be built or remain standing in such areas, as they pose safety risks to incoming or outbound aircraft. As such, the undertaking poses adverse impacts to the two historic hangars. As noted briefly, the hangars and the buffer zone land are not currently owned by the airport, but by the Daly Ditch Irrigation Company. Purchase of the land around them and the hangars is planned at some date subsequent to approval of the EA, and is necessarily for the implementation of recommended mitigation measures.

The EA outlines four project alternatives, generally described as:

- Alternative 1 – No change to current runway configuration;
- Alternative 2 – Minor change to current runway configuration;
- Alternative 3 – Construct new runway 240' east of current runway, and;
- Alternative 4 (the Preferred Alternative) – Construct new runway 400' east of current runway.

There would be no effect on the identified historic properties under Alternatives 1 and 2 and no need for mitigation. However, under Alternatives 3 and 4, adverse effects to the historic properties would be identical, creating the need for mitigation measure identified below as Track 1 and Track 2.

On February 7, 2006, the Hamilton/Ravalli County Airport Board voted to approve a general course of action for the mitigation of adverse effects to the historic hangars, described below.

Regulatory Environment

The relevant regulations that formed the requirement for this cultural resources mitigation plan are the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act (NHPA), as well as other relevant Montana state statutes. The NEPA and Section 106 of the NHPA both require a review of project and program effects on the human and cultural environment. An effect is considered adverse when that effect diminishes the

characteristics of a historic property to the extent that it is no longer possesses characteristics which create eligibility for the National Register of Historic Places. These laws include:

Federal Statutes

- **National Environmental Policy Act of 1969 (NEPA)**

On January 1, 1970 the National Environmental Policy Act of 1969 (NEPA) was signed into law. NEPA established a national environmental policy intentionally focused on Federal activities and the desire for a healthy environment balanced with the other essential needs of the nation. NEPA established a mandate for Federal agencies to consider the potential environmental consequences of their proposals, document the analysis, and make this information available to the public for comment prior to implementation. The environmental protection policy established in NEPA, Section 101, is supported by a set of "action forcing" provisions in Section 102 that form the basic framework for Federal decision-making and the NEPA process. This includes the systematic consideration of alternatives and examination of the direct, indirect, and cumulative environmental impacts associated with implementation of proposed federal actions.

For this project, an Environmental Assessment (EA) is being prepared to determine whether the undertaking significantly affects the quality of the human environment. Cultural resource considerations under the National Historic Preservation Act (NHPA) are often coordinated under the "umbrella" of NEPA.

National Historic Preservation Act of 1966 (NHPA) & Section 106 of the NHPA

The NHPA established the federal government's policy on historic preservation, as well as the national historic preservation program through which that policy is implemented.

- **Section 106 (36 CFR Part 800) of the NHPA**

Section 106 of the NHPA requires that federal agencies having direct or indirect jurisdiction over a proposed federal, federally assisted, federally funded, or federally permitted undertaking, prior to approval of the expenditure of funds or the issuance of a license, take into account the effect of the undertaking on any district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (National Register). The Advisory Council on Historic Preservation (ACHP) is the agency that oversees the federal relationship with historic preservation, and has the option to actively participate in consultation.

Within the Area of Potential Effect (APE) for this particular undertaking, two historic hangars have been identified as eligible for inclusion in the National Register. The project, as designed, will have a significant adverse effect on the properties. Under Section 106, "removal of the property from its historic location" is an adverse effect.

However, the law provides a path to mitigating significant adverse effects to levels that the lead agency (FAA), the SHPO and other consulting parties can agree are less than significant. Once measures have been agreed to between the FAA and SHPO which lead to the resolution of

adverse effects, a Memorandum of Agreement (MOA) is created between FAA and SHPO. The FAA, SHPO and ACHP are all signatories to the MOA, and documentation, such as the mitigation measures provided in this document, may be provided as part of the MOA. At this point, the undertaking may proceed.

Montana State Statutes

- **The Montana Antiquities Act, as Amended (1995)**

This Act addresses the responsibilities of state agencies regarding historic and prehistoric sites. Each state agency is responsible for establishing rules regarding these resources that address National Register eligibility, appropriate permitting procedures, and other historic preservation goals, including a permitting process prior to archeological work on state lands.

Cultural Resources Inventory Background

The Hamilton/Ravalli County Airport Board and Ravalli County Commission, with funding assistance from FAA, are planning a series of improvements to airport facilities which include the relocation and enlargement of the airport runway. Because of FAA's role in the project, compliance with federal environmental regulations is required.

To satisfy the cultural resources component of the overall EA process as required by NEPA, Morrison-Maierle, Inc. (MMI) retained GCM Services, Inc. to conduct a cultural resource inventory of the Area of Potential Effect (APE). The objective of the field survey was to identify, through background research and field survey, any cultural sites over fifty years old, determine whether a located site was listed or eligible for the National Register of Historic Places (National Register) and assess whether those listed or eligible sites would be adversely affected by the proposed undertaking. See appendix B for the GCM report.

In their May 2004 report, GCM identified two new historic sites, the Leonardi Farm Complex, site #24RA769, and what was recorded then as the Daly Ditch Irrigation Buildings, site #24RA770 (referred to throughout this report as the Hayward Hangars). GCM recommended the Leonardi Complex as eligible to the National Register, but also recommended the Hayward Hangars as ineligible for the National Register. FAA, in correspondence to the Montana State Historic Preservation Office (SHPO) concurred with GCM's findings, noting that

"The proposed runway relocation project moves the runway environment further away from the old Leonardi Place (400 feet further east and 1,000 feet further north) and in itself will have no impact on these potential historic structures. The proposed project is also well away from the potential historical interests...[W]e have reviewed this report and agree with the conclusions reached by GCM Services, Inc" (FAA, June 18, 2004).

However, the SHPO disagreed with GCM's conclusions regarding NRHP eligibility for the Hayward Hangars. Instead, the SHPO found that the two historic airplane hangars which comprise the site were indeed National Register eligible. FAA has since concurred with SHPO's new determination of eligibility for the two historic hangars. See Map 1, "Location Map" on the following page for an overview for the APE surveyed by GCM, as well as the location of

relevant historic properties. Appendix A includes site forms revised by MPA for the Hayward Hangars.

FAA Airport Improvement Program and Recommended Mitigation

FAA and the runway relocation plan demands that buildings and structures located within the runway buffer zones be relocated—an important safety concern but a serious impact to the integrity of the historic properties, as defined by 36 CFR 800.

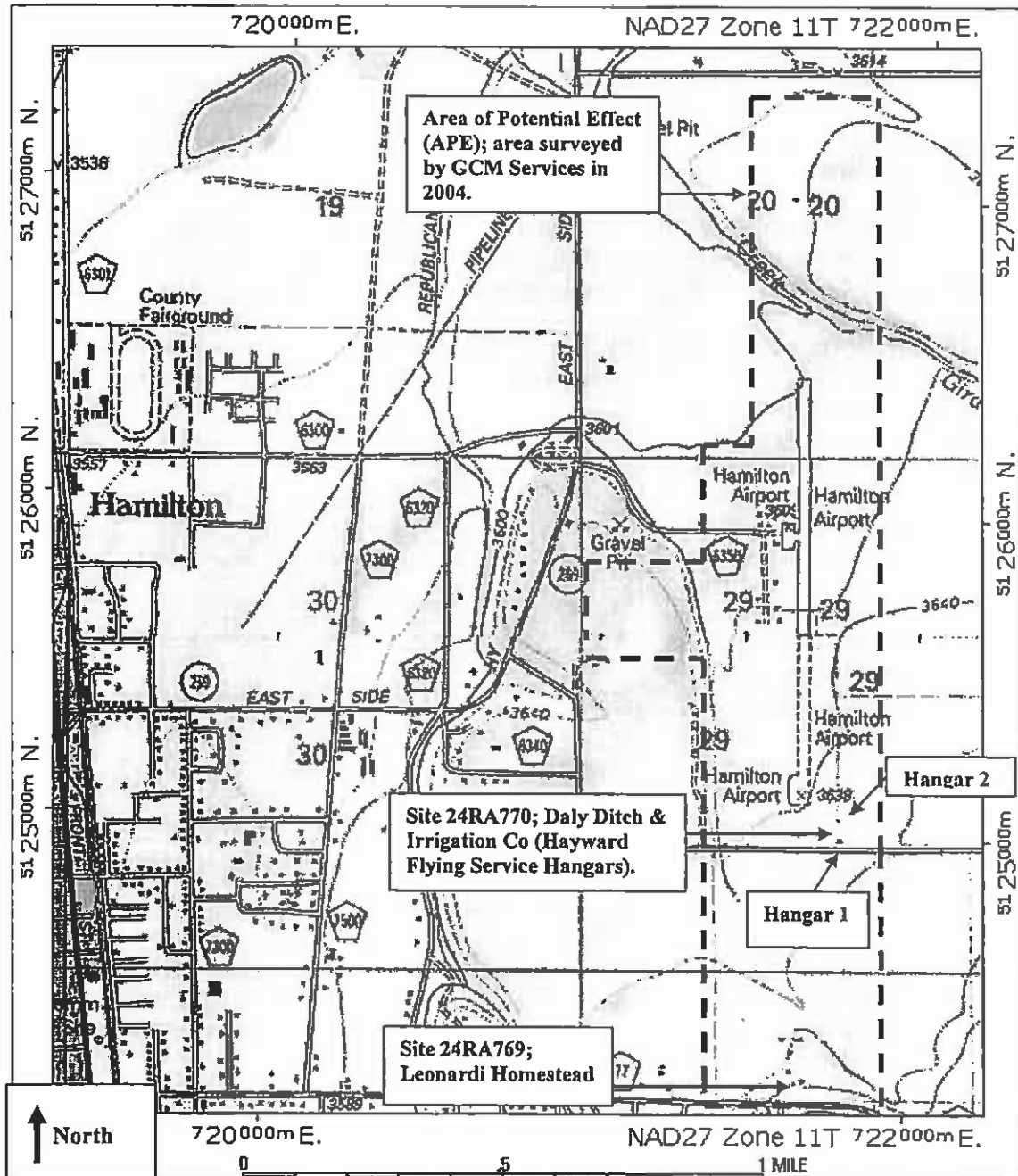
The relocation of the two hangars represents an adverse effect to historic properties, and created a need to mitigate or reduce the adverse effect to no effect or no adverse effect. SHPO concluded that a mitigation plan should be prepared for the two airport hangars. Mitigation measures herein are designed to provide a means to reduce project effects to levels which are less than significant, provide methods through which FAA, SHPO and the ACHP may agree to an MOA, and preserve the historic hangars and create the opportunity to build public recognition of their value to local and regional history.

Ravalli County Airport improvements would be funded under the FAA Airport Improvement Program (AIP), a federal grant program. Key performance indicators for the program include the elimination of airport conditions that cause accidents and security breaches; noise reduction; and the maintenance of at least 93% of airport pavement in fair or better condition.* AIP grant funds are made available through a contract between FAA and the local airport owner, referred to as the sponsor. The funds for AIP grants come from the Aviation Trust Fund, and the amount is determined through a 95/5 match, where FAA pays 95% of the cost of the project and the sponsor providing the final 5% of the overall cost of the project.

Ownership of all airport facilities, including improvements made through AIP grants, remains with the sponsor. Consequently, recommended mitigation measures are described as the responsibility of the sponsor, but will be funded under the grant match framework described above, pending agreement through an MOA between FAA, SHPO, and the sponsor, Ravalli County Airport.

* For more information on the AIP, see <http://www.whitehouse.gov/omb/budget/fy2004/pma/faagrants.pdf#search='FAA%20airport%20improvement%20program'>

Map 1 ~ Project Area and Historic Properties in Relation to the Airport and the Town of Hamilton.



Cultural Setting

"This is not a time when women should be patient. We are in a war and we need to fight it with all our ability and every weapon possible. Women pilots, in this particular case, are a weapon waiting to be used." Eleanor Roosevelt, 1942

The Hayward Hangars occupy a unique niche in Hamilton history, and potentially, Montana history, for their place in aviation history, women's history, and for their relationship to Dr. Herbert Hayward, who played an important role in the development of aviation in Ravalli County and Montana.

Dr. Herbert V. Hayward moved to the United States from England in 1899, when he was 17 years old. After earning his medical degree, he became a doctor for the Northern Pacific Railroad. He left the railroad to practice medicine in the Bitterroot Valley in 1910.

While Dr. Hayward maintained his medical practice in Hamilton for many years, gaining a regional reputation as one of the foremost physicians in the treatment of Rocky Mountain Spotted Fever, aviation became his greatest passion. He became the founding father of Bitterroot Valley aviation as well as a strong advocate for aviation statewide. Hayward himself trained a number of pilots for service in World War II, and was instrumental in securing the federal funding which supported the construction of the hangars during World War II. Hayward played an important role in the purchase of the first local airport site, purchased the first airplane owned and based in Hamilton, and began his Hayward Flying Service at the current hangar location. He was also a significant figure in the formation of the Montana Aeronautics Commission.



Ravalli County leaders began to see the utility of flight to meet local commercial and transportation needs during the 1920s, and worked to locate a suitable landing field near Hamilton. In 1934, land that made up a portion of Marcus Daly's historic Bitterroot Stock Farm was selected and leased (and later purchased) from the Daly estate.

Following final federal approval, the federal Civil Works Program (CWP), a New Deal program, began construction of the Hamilton Airport landing field. The original grass field, which occupied the site of one of the first barnstorming fields in the Valley, was constructed in a "T" shape, with a north/south runway a quarter of a mile long and 400' wide, and a identically dimensioned similar east-west runway that ran parallel to today's Tammany Lane, then referred

to as “airport road.” Dr. Hayward’s original hangar, built in 1934 and the original home of the Hayward Flying Service, was constructed soon after the grass runways were completed. The east/portion runway lay just north of Dr. Hayward’s original hangar, which today forms the rear portion of Hangar 1.

Soon after Pearl Harbor, it became clear that a shortage of male pilots would have a serious, detrimental effect on the capabilities of the U.S. Army Air Force (USAAF). Army Air Corps. leadership began to seriously consider women pilots for non-combat missions such as ferrying aircraft from factories to military bases, and towing drones/aerial targets. Units were established separately (as the Women’s Flying Training Detachment and Women’s Auxiliary Ferrying Squadron (WFTD and WAFS), respectively) in 1942, then merged to form the Women Air Force Service Pilots (WASPs) in 1943.



Hangar 1, soon after construction in 1942. Hayward’s original hangar forms the rear of the new hangar.

Out of approximately 25,000 applicants nationwide, 1,830 women were accepted into the WASP training program and 1,074 graduated. 38 WASPs died in service to their country, including Evelyn Sharp, who grew up in Nebraska but was born in Melstone, Montana. The WASPs were considered civil service employees and did not receive military status. On June 21, 1944, a bill to give the WASP military status was narrowly defeated. In late 1944, the USAAF disbanded the WASP

effort. Finally, in 1977, President Jimmy Carter signed legislation granting the WASP military status and thus access to Veterans benefits.

The Hayward Flying Service played an important local role in homeland defense after the United States entered World War II. In early 1942, flight instructors and mechanics were secured which enabled the Hayward School to begin pilot training for wartime service. It was at this time and for these reasons that Hangar 1 was constructed in 1942 with U.S. War Department funds. Hayward’s original hangar now forms the rear portion of Hangar 1. Further alterations to this hangar include a 1943 eastern addition to the hangar, which provided classroom space for aviation students who were participating in the ferry pilot program. The largest structure, the Quonset-style structure referred to here as Hangar 2, was built in 1945 to house the growing number of aircraft based at the airport, which, following World War II, were used to train returning soldiers under the G.I. Bill. All these aircraft were owned and operated as part of the Hayward Flying Service.

The instructional course offered to women pilots at Hamilton Airport was the first phase in the overall WASP training program. Successful completion of the Hamilton flying course qualified students for advanced training at the Woman’s Auxiliary Ferrying Service School at Avenger Field in Texas, today’s home of the National World War II WASP Museum.



Dr. Hayward, instructors, and the five Montana women who formed the Hayward Flying Services' first WASP training class.

In September 1943, the first class of five Montana women began their training with the Hayward Flying Service. In 1944, plans for a second class were derailed when the military ended the program.

Besides the WASP program, the Hayward Flying Service trained other young pilots who later served in World War II. Charles Duus, who later wrote *Soaring With Eagles* (2001), an account of the history of flight in the Bitterroot Valley, learned to fly at the Hayward Flying Service and served as a bomber

pilot over Europe during World War II. He was shot down over Germany and spent the last months of the war in a prisoner-of-war camp before returning to life in the Bitterroot Valley and flying at the Hamilton Airport. Ruth Reese Centers, then a local high school student, also received training at the Hayward school. At age 16, she became the first licensed women pilot in Ravalli County, and potentially, Montana during that time.

During the summer of 1946, Dr. Hayward retired from his company. New management renamed the company Bitterroot Flying Service, then Hamilton Flying Service. In 1949, the Hamilton Airport runway was expanded to 3,800 feet, and in the 1950s the airport was subject to major renovation, which included a further runway extension. The hangar area was relocated to the northwest part of the field, though the Hayward Hangars were left in place. During this era, aviation activities at the Hamilton Airport took many important forms, including search and rescue operations in the nearby national forest, air freight, wildlife salting programs, aerial grass seeding, aerial spraying, and continued flight instruction.

The Hayward Hangars remained in their original location but were no longer used to store aircraft. Ownership was transferred to the State Water Board and later sold to the Daly Ditch Irrigation Company. Since that time, the hangars and the surrounding grounds have been used by the Daly Ditch Irrigation Company for administrative offices, maintenance shops, and vehicle and equipment storage.

Mitigation Plan Overview

Methodology

In November 2005, Morrison-Maierle, Inc (MMI), contracted with the Montana Preservation Alliance (MPA) to create a mitigation plan to manage effects to historic properties located on land anticipated to be acquired under the current plan by Ravalli County to improve the airport complex. The mitigation plan was prepared in consultation with persons who have concerns about or knowledge of the affected cultural resources. MPA performed project background research at the SHPO, the Hamilton Ravalli County Airport, the Bitterroot Valley Historical Society, and received project information from MMI. MPA also conducted multiple site visits to the hangar location, recording the hangars with digital photographs and recording GPS markers. MPA further consulted with SHPO, including a site visit to the project area with Peter Brown of the Montana SHPO, and met with the Hamilton/Ravalli County Airport Manager and Airport Board. MPA also met with members of the Bitter Root Land Trust and Ravalli County Aviation Safety Foundation, Inc.

Mitigation is a process that lessens impacts to historic properties by planned undertakings that are proposed in proximity to historic properties. Preservation of the historic property in its historic setting is the most desirable mitigative option. If this is not possible, then the goal of mitigation measures is to express the historic significance of the property in new ways. For historic buildings that have been determined to be eligible for the National Register, cultural resource professionals can document the interior and exterior conditions, and consider mitigation strategies that recommend the building to fill a new need in a manner that respects the building's historic integrity. Mitigation may also take the form of site enhancement, such as the restoration and/or stabilization of all or a part of the site. Public outreach programs can be important parts of mitigation plans. When avoidance to impacts on resources is not feasible, meaningful mitigation generally takes the following forms:

- Modifying the proposed undertaking through redesign, reorientation to the project site, and other similar changes;
- Rectifying the potentially adverse effects by rehabilitation, repairing, or restoring the affected resources;
- Compensating for the potentially adverse effects; for example, through the recovery, preservation, and interpretation of scientific, prehistoric, historic and archeological data that express its value to the public; and,
- Minimizing the potentially adverse effects over time through preservation and maintenance activities throughout the life of the project.

This plan is a mitigation strategy through which FAA may meet its responsibilities related to cultural resource goals and objectives related to the stewardship of the historic Hayward Hangars. The critical first phase of mitigation is a determination of the hangars' structural integrity relative to their relocation. FAA should directly and quickly move to fund the initial evaluation of the hangars' structural integrity relative to their potential for relocation, because it is this important first step which will guide future mitigation measures. Anticipating that one or more of the hangars can be relocated, recommended mitigation will follow a track (referred to as

Track 1) to relocate, partially rehabilitate, and provide the historic preservation support required for the long-term stewardship of the historic hangars. Track 1 mitigation describes measures that are generally divided into two phases: 1) preservation planning, and 2) relocation and initial rehabilitation.

This plan additionally offers a generalized, long-term vision for the historic hangars' that includes overall site planning, interpretive and museum site planning of local and aviation history, renovation of hangar interiors for reuse, and heritage tourism. Projects related to this portion of the plan will likely be supported through local initiative and funding, but will be difficult to accomplish without the critical, foundational support of FAA through earlier mitigation measures. This overview is not offered as a mitigation requirement but as only one potential future for the resources which sustains and enhances their historic integrity for community benefit.

If relocation of the hangars cannot be structurally achieved, then documentation of that structure or structure as described by the guidelines of the National Park Services' (NPS) Historic American Building Survey (HABS) program is recommended. In this event, a plan for acceptable mitigation is described in Track 2. After satisfactory documentation has been prepared, the hangar or hangars may be demolished.

Mitigation Plan Goals

For cultural resources, SHPO has determined that due to the distant locations of the Hedge Ditch (site #24RA764) and Leonardi Homestead (site #24RA769) from the undertaking, the proposed project "represents no adverse effect to these eligible properties" (SHPO correspondence, July 8, 2004). Because of this determination, the mitigation plan has been crafted for the preservation of only those historic properties impacted by an adverse effect, the historic airplane hangars.

The long-term preservation, stewardship, and reuse of Hamilton Airport's historic airplane hangars are the broad goals behind the mitigation plan. Relocating the hangars to an area adjacent to the current airport complex provides the opportunity for overall mitigation planning that includes the following broad goals:

Goal A: Maximize the public benefits provided by the Hamilton/Ravalli County Airport.

Goal B: Minimize the loss of local cultural resources that represent unique and important aspects of Hamilton and Ravalli County history.

Goal C: Enhance the ability of historic properties and cultural resources to withstand the impact of hazards and threats while maintaining their historic integrity, and create dynamic new uses for local historic buildings which promote and preserve local and regional history.

Goal D: Inspire, encourage and support other local efforts to identify, evaluate, and designate historic properties and cultural resources in Hamilton and Ravalli County.

Mitigation Plan Objectives

The plan objectives provide a general roadmap for successfully achieving mitigation plan goals. These include:

- Objective 1. Document the hangar's current structural condition;
- Objective 2. Assess appropriate methods to relocate, rehabilitate and stabilize the historic properties in the context of the resources' future use.
- Objective 3. Craft a plan for the adapted re-use of the hangars to promote long-range use and stewardship for community benefit;

Recommended Cultural Resource Mitigation Measures

The value of an historic property is more than the sum of its structural parts. Of almost equal importance is the building's relation to the surrounding landscape, its "sense of place" within the landscape. Even in the most carefully planned and executed relocations, some of the historic property's structural integrity may be compromised.

For the Hayward Hangars, relocation is the only means of saving the resources from demolition. The Airport Board has selected a new site for the airplane hangars within airport grounds, which generally retains the historic relationship that the hangars have with the landscape that surrounds them.

Several decades of use by the Daly Ditch Irrigation Company have had an overall detrimental effect on the condition of the hangars as well as their immediate setting. Time and neglect have caused general deterioration to occur on the exterior walls of the hangars and the roofing appears to be deteriorated. The interiors have also been modified to meet the needs of the Daly Ditch Irrigation Company.

On February 7, 2006, the Hamilton/Ravalli County Airport Board voted to support mitigation measures to relocate the Hayward Hangars that are contingent on two critical early steps. First, the sponsor must purchase the hangars and the land currently owned by the Daly Ditch Company. Then, the hangars are to be structurally evaluated to ensure they retain structural integrity to make relocation possible. Following this assessment, mitigation would follow track one, track two, or a combination thereof, as described below.

Mitigation Measures Recommended to the Federal Aviation Administration

The following phased mitigation measures are designed to enable FAA to meet Mitigation Plan Objectives 1, 2, & 3. By meeting these objectives, FAA and the sponsor, will create the conditions required to meet overall mitigation goals.

First, the sponsor should retain a qualified structural engineer with expertise in historic buildings to evaluate the structural integrity of the hangars. The engineer will verify the structural fitness of the hangars for relocation to a site on airport property that is adjacent to the current hangar complex. Once the engineering evaluation has been completed, FAA and SHPO would concur with the sponsor's determination that relocation is feasible or infeasible for at least one of the hangars, mitigation would follow one of two tracks, or a combination thereof.

Track 1 ~ Once the hangars are determined to be structurally fit for relocation, the sponsor should support preservation planning to include completion of a Historic Structures Report (HSR) and National Register of Historic Places nomination.

Then, the sponsor should commence the physical relocation of the historic hangars, including the construction of an access road from Tammany Lane to the new site, fencing to secure the new

hangar site within the current airport complex, and foundation construction for the hangars. Once relocation and stabilization (essential to the long term viability of the structures) has been completed, the sponsor should support the installation of a historically-appropriate, insulated roof for both hangars, as well as general exterior restoration work, including the repair of deteriorated wood cladding, new paint, and the restoration of the hangar doors to their historic appearance. These restorations would conform to the guidelines set forth by the HSR, by the Secretary of the Interior's *Standards for the Treatment of Historic Properties*, and through consultation with the SHPO and local stakeholders. At this point, the sponsor should secure the structures from unauthorized entry.

Finally, the sponsor should establish a setting and feeling appropriate to the hangars' historic period of significance. As the future location of the hangars will generally coincide with the site of original grass runway historically associated with the hangars, the sponsor should undertake the reconstruction of a portion of the original grass runway for interpretive purposes at a location to be determined during future site planning. Supporting the future historic runway reconstruction for interpretive uses will contribute to the adaptive reuse of the hangars and long-term stewardship of the historic properties located within airport boundaries.

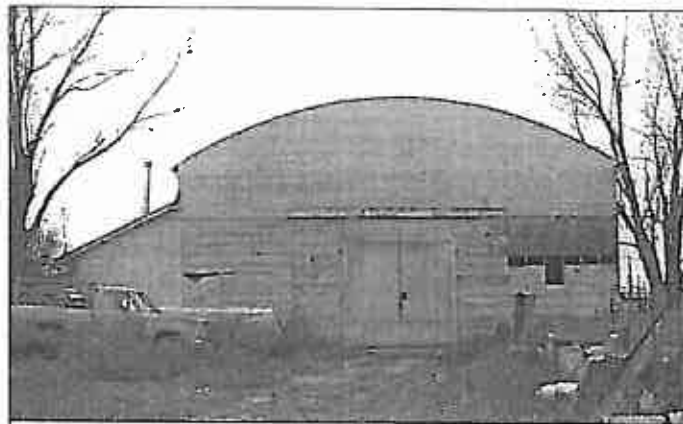
Track 2 ~ the sponsor would undertake the historical documentation of those hangars determined as structurally unfeasible to relocate, described below in greater detail.

Finally, if a single hangar was evaluated as moveable while another was not, the first hangar would follow the recommended track 1 mitigation measures while effects to the second hangar would be mitigated following track 2 actions.

Track 1, Phase 1 – Preservation Planning

Historic Structures Report Preparation

Creation of a Historic Structures Report (HSR) is a significant mitigation measure for the historic hangars, and will address building condition, later modifications, and structural considerations that will provide important baseline data for relocation planning and future rehabilitation. A qualified professional, such as an architect with a background in historic preservation or an historical architect, is recommended to prepare the HSR. An HSR is an invaluable reference tool that can be



The deteriorated condition of Hangar 1 demonstrates the need for an HSR to guide future rehabilitation and reuse.

used in conjunction with other information to minimize the loss of significant historical material or character when making decisions that will affect a historic structure.

Generally, a concise and effective HSR includes the following:

- **A Management Summary.** This is a concise account of research done to produce the HSR, major research findings, major issues identified in the task directive, and recommendations for treatment and use. Administrative data on the structure and related studies are included.

Part I, Developmental History. This is a report which documents the evolution of the historic structures, its current condition, and the causes of any deterioration. It is based on documentary research and physical examination. This section should also briefly describe the people and events associated with the hangars.

In addition, the physical construction, modifications, and use of the structure should be summarized in this section. The text should be based on historical documentation with corroboration from field observation and the evaluation of the building materials used.

Finally, Part I should contain a systematic accounting of all features, materials, and spaces according to age, significance, and condition. The text should also discuss causes of deterioration and structural adequacy.

- **Part II, Treatment and Use.** This section will present and evaluate alternative uses and treatments for the historic hangars. Emphasis is on preserving existing historic material and resolving conflicts that might result from the structure's ultimate future use. In concise terms, this section outlines applicable laws, applicable land use regulations, and functional requirements. Specific attention should be given to issues of human safety, fire protection, energy conservation, abatement of hazardous materials, and handicapped accessibility. Part II concludes by recommending a treatment and use responding to the objectives identified by airport management, concerned parties, and this mitigation plan.
- **Part 3, Record of Treatment.** This is a compilation of information documenting actual treatment. It includes accounting data, photographs, sketches, and narratives outlining the course of work, conditions encountered, and materials used. An appendix should include a bibliography, drawings, photographs, and building materials analysis.

Overall, all aspects of the historic hangars and their immediate grounds should be addressed in the HSR which will provide reference. If changes to historic buildings begin without an HSR as a guide, the historic integrity of the hangars may be compromised and physical evidence important to understanding the history and construction of the building may be lost. Preparation of a report helps ensure that the history, significance, and condition of the property are understood and taken into consideration throughout the buildings new life. A well-prepared HSR is an invaluable preservation guide. See appendix C for the National Park Service Preservation Brief 43, *The Preparation and Use of Historic Structure Reports*.

National Register of Historic Places Nomination

A cultural resource professional should be retained to craft a nomination for the Hayward Hangars to the National Register of Historic Places. Ideally, listing of the properties would occur prior to the relocation of a hangar or hangars. Once a historic property has been listed on the National Register, there are no federal restrictions on the movement of buildings. If this is not possible, then the National Register nomination could proceed during phase 2 of this track. As the National Register's "criteria consideration" for moved properties notes, "A property removed from its original or historically significant location can be eligible if it is significant primarily for architectural value or it is the surviving property most importantly associated with a historic person or event" (National Register Bulletin 15).

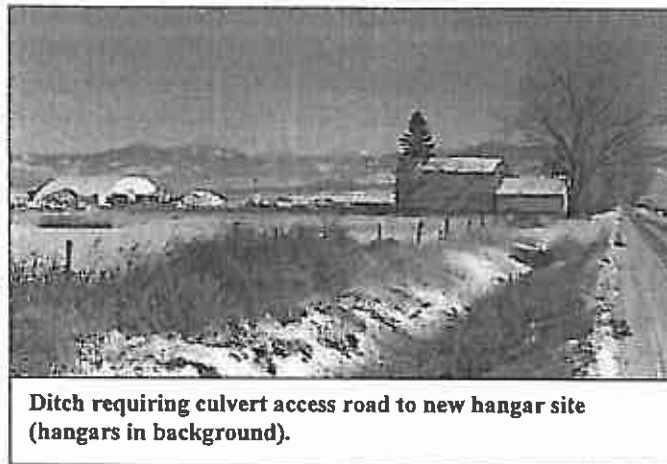
The SHPO has determined that the Hayward Hangars are eligible for the National Register. Hangar 1 is determined as eligible under Criterion A for its association with early Montana aviation history, as well as its connection to the war effort. SHPO states that Hangar 2 is eligible under Criterion C as a good example of utilitarian Quonset style construction popular during World War II. SHPO noted that Hangar 2 may also be eligible under Criterion A, but that its postwar contributions are not yet well documented (such contributions would be documented by the National Register nomination). Further, both hangars are potentially eligible under Criterion B for their relationship with Dr. Herbert Hayward, who played an important role in the development of aviation in Montana, and was instrumental in securing the federal funding which supported the construction of the hangars during World War II.

Track 1, Phase 2 – Hangar Relocation and Structural Restoration

Hangar Relocation

Designated by the Ravalli County Airport Board, the general area proposed as a new hangar location is also a historically appropriate setting for the relocated hangars. The new site is approximately 200-400 yards west of the current site, but planning the relocation of historic buildings is a delicate and complicated process. The exact future location of each hangar should be determined through consultation between SHPO, FAA, and the sponsor.

- Before relocation occurs, the sponsor should ensure that the proposed location for each hangar meets requirements for future site planning, which may include parking areas, disabled access, future museum and interpretive activity, as well as any building permits that may be required by Ravalli County zoning codes.



- The sponsor should retain a structural engineer to plan and supervise the relocation of the resources, including the construction of a new, north/south culverted access road connecting Tammany Road to the hangar's new location.

Local contractors may be available to move the buildings, and SHPO or the National Trust for Historic Preservation (NTHP) may offer a directory of contractors qualified for such a project. The NTHP offers general advice on relocating buildings, noting that the "The International Association of Structural Movers (IASM) is a good place to start looking for a contractor to move an historic building. The IASM is an organization whose members are actively involved with moving houses, bridges, ships, and other structures, and who manufacture products used in moving these structures. The IASM's web site, www.iasm.org, lists their members by state." Two IASM member firms are located in western Montana.

The new hangar site should also be secured with fencing to ensure a safe separation between the new hangar site and the airport complex.

Hangar relocation should be undertaken in such a way to avoid interference with airport operations. One recommended strategy would be to store the hangars on airport-owned land (such as the Leonardi Homestead) until the proposed new runway (under the preferred alternative #4) is completed and while foundations at the new hangar location are under construction. Once the new runway is operational and foundations completed, the hangars may be relocated to the new location. This will avoid conflict with airport traffic at the current runway will still operational, as well as the new runway once completed.

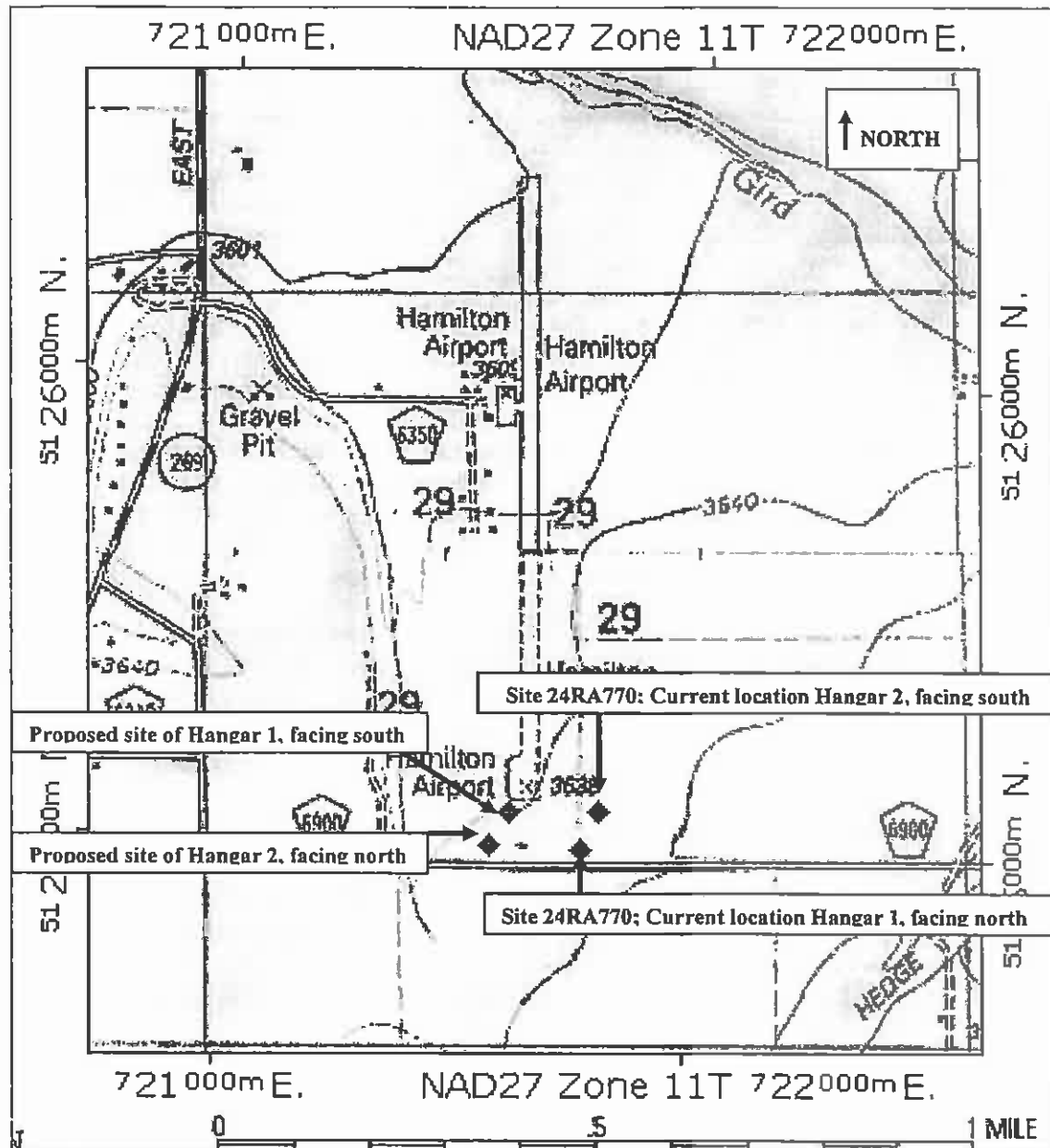
Hangar Orientation and Structural Preservation

- The façade of Hangar 1 faces north, while the façade of Hangar 2 faces south. Historically, this orientation reflected that fact that a T-shaped grass runway (now non-existent) ran between the hangars, with the east/west portion of the "T" crossing between the two hangars during their era of primary use. As such, the current location and orientation of the hangars have little connection with the configuration of the current runway and associated modern hangars, though the overall airport setting is an important contributing element to the continuing historicity of the hangars.

The historic orientation of the hangars, offset with facades facing each other, should be repeated in the new location. This pattern would also be replicated in the event that only a single hangar is relocated. This will allow for the future development of a Museum and Interpretive Plan where a portion of site is transformed into a small-scale replication of the original airport complex, incorporating both the hangars as well as a T-shaped grass runway modeled on the original.

Map 2 (following page) shows the current location of the historic hangars and demonstrates the projected locations of the hangars.

Map 2 ~ Current Location of the Historic Hangars and Projected General Location of the Historic Hangars.





View from the current hangar site to the potential new hangar location approximately 200 yards to the west.

Critical to the long-term stewardship of the hangars, as well as their reuse, is the fabrication of poured concrete foundations for the hangars. Throughout their life, the hangars have rested on the soil, and the ground-level portions of the hangar structures may have deteriorated as a result of long-term contact with moisture, freeze-thaw cycles, etc.

A foundation contractor should be retained to determine the condition of the two structures prior to placement on the new foundations, and conclude whether portions of the hangars should be rehabilitated prior to placement on a new foundation.

General recommendations for the new hangar foundations include:

- Slope the ground away from the foundation to move water away from the building.
- Keep landscaping several feet away from the foundation wall. Vegetation retains unwanted moisture against buildings, and roots may cause the new foundation to shift and crack.
- Consider French drains or another drainage method to ensure that water does not run down the foundation wall or get trapped along it.
- Use splash blocks to divert water away from the foundation wherever downspouts are not connected to underground drains.
- Foundations should not be painted, sealed, or coated with decorative or waterproof plaster. Such actions could prohibit the natural movement of moisture through masonry and cause foundation problems.
- Rehabilitate the structural portions of the hangar related to the new foundation, as needed.

Track 2

The Historic American Building Survey (HABS) “mitigative documentation” was formed under the provisions of Section 106 of the amended National Historic Preservation Act of 1966. As the National Park Service (NPS) states, “Federal agencies must produce documentation to set standards for buildings that are listed, or are eligible for listing, in the National Register of Historic Places, to mitigate the adverse effects of federal actions such as demolition or substantial alteration. NPS field offices [for this project, the Denver Support Office] oversee this aspect of HABS documentation, final review, and approval by the HABS office in Washington D.C. Mitigation documentation is then included in the HABS Collection” (see the NPS/HABS website at <http://www.cr.nps.gov/habshaer/habs/habsmita.htm>).

Three (3) types of data form the overall HABS documentation: measured drawings, written histories, and large-format photographs. Further, there are four (4) levels of HABS reporting, all of which use, to varying extents, the three types of required data. Level 1, the most complete reporting standard, demands a full set of measured drawings that demonstrate historic or current conditions, photographs that include historic views as well as large-format negatives of exterior and interior views as well as negatives of existing drawings, and a historical description of the resource. Meanwhile, Level IV merely requires a “HABS/HAER (Historic American Engineering Record) Inventory Card,” that the NPS/HABS guidelines themselves describe as “rarely considered adequate documentation for the HABS/HAER collections” (p. 6, *HABS/HAER Standards*). See Appendix D for the National Park Services’ *HABS/HAER Standards*.

FAA, SHPO and the sponsor should consult and concur regarding the most appropriate level of HABS documentation for the resources should this form of mitigation be necessary. Recommended, supportive documentary measures would include an oral history project with individuals historically associated with historic hangars and local aviation, and the collection of historic photographs. Copies of all of the documentary material will be archived with the Bitterroot Valley Historical Society and Montana State Historical Society, as well as the appropriate HABS repository.

Long-term Stewardship and Use

This phase of the stewardship and use of the historic hangars is not recommended as a direct responsibility of the FAA. Instead, this general description of the future use of the hangars is included to demonstrate the extraordinary opportunity the airport improvement project provides for the revitalization of significant historic resources related to the aviation and social history of the Bitterroot Valley. Recommended mitigation measures are of critical importance to the long-term use, preservation, and documentation of the historic hangars, as well as to the notion of providing meaningful mitigation for impacts to historic properties.

Citizen committees involved with both local aviation and local history have crafted a future for the hangars with historic preservation and historical interpretation as its guiding principle. While an Interpretive and Management Plan is not yet written for the hangars, a number of preservation-based visions have been created which demonstrate the value and usefulness of the historic hangars. The following is an overview of the thoughts provided by these citizen organizations.

Future Reuse and Historic Interpretation

Preservation of the Haywood Hangars and restoration of these properties as an interpretive site offers an opportunity to tell a little known, yet compelling 20th century story and, by so doing, keep that important history alive. The important contributions of women and local communities to the World War II war effort, and the story of early aviation in Montana are important themes that can be told here as nowhere else.

The interpretation and preservation of historic sites are inextricably linked, and should be planned together to reach an authentic experience. There is tremendous power in the actual site where historic events occurred, where authenticity makes the past immediate. Authentic sites are more attractive for heritage tourism, meaning that interpretation of aviation history at the historic hangars and the ability to physically link that history with other significant Bitterroot Valley locations has real economic advantages that support the sense of recognizing a significant historic past. The goal is the creation of the "Farmers and Flyers Heritage Park," which would serve as a "multi-faceted community resource, historical park and trail system celebrating the agricultural and aviation history of the Bitterroot Valley" (Farmers and Flyers Vision Statement, 2005).

Hangar and Landscape Use and Rehabilitation

The site plan of the relocated hangars would be designed to accommodate a replica of the T-shaped grass runway. Site planning would also include visitor parking, as well as designated spaces for picnic areas, signage, and wayside displays related to local historic significance. A trail system is also envisioned which will eventually link the new hangar location with the Leonardi Homestead, and, eventually, to other significant historic properties such as the Daly Mansion and the Bitterroot Stock Farm.

Both hangars would undergo exterior restorations to stabilize them structurally and return them to their historic appearance, including, potentially, the Hayward Flying Service historic signage that is so prominent in historic photographs of the structures. Uses for Hangar 1 include reuse as a multi-purpose space which would include classrooms, conference space, multi-media presentation room, as well as support capabilities including a kitchen, restrooms and storage.

Hangar 2, meanwhile, has the potential for use as an aviation museum. A small number of historic aircraft (ideally, those aircraft once part of the Hayward Flying Service) could be acquired for interpretive purposes, and the restoration of these aircraft could be a centerpiece of an historic exhibition. An example of such a program is found at the historic Floyd Bennett Field, a part of the National Park Service's Gateway National Recreation Area in New York City. One historic hangar at the now-defunct airfield (New York City's first municipal airport) serves as the home for the Historic Aircraft Restoration Project (HARP), where skilled flying enthusiasts restore historic aircraft in view of the public. Dr. Herbert Hayward's role in local aviation history, the growth of flight in the Bitterroot Valley, and interpretation of the WAFS/WASP programs are all important historical events that are suitable for museum exhibition.

The HSR and National Register nomination, funded by FAA, would allow for both the historically sensitive rehabilitation of the hangars and provide critical baseline information related to the historic uses of the hangars.

Museum Collection, Exhibits, and Interpretation

Creation of an Interpretive and Management Plan

Citizen groups may wish to begin creation of an Interpretive and Management Plan early in the process, prior to the relocation of the hangars and perhaps in concert with the HSR and National Register nomination. The National Register offers a bulletin entitled *Telling the Stories: Planning Effective Interpretive Programs for Properties Listed in the National Register of Historic Places* (2002), which may be of assistance in initial interpretive planning once the hangars are listed in the National Register.

The Interpretive and Management Plan will outline the hangar's historic narrative as well as how the narrative will be interpreted. Research sources should be identified, as should the form of interpretation. The site should also be planned in detail. The plan should set priorities and identify potential partners and relationships. It should be as specific and as detailed as possible, and it should allow for future revisions so that it can adapt to changes in the interpretive environment or new research that identifies new interpretive directions.

This plan should include a research design that describes the historic data required to document and create exhibits. The research design will describe what sources exist, their locations, how they will be accessed, who will do the necessary research, and in what format this research will be presented and preserved (exhibits, tour, etc). Research is crucial to both the preservation (identifying and defining the full, physical parameters of sites), and interpretation (filling out the

story) of sites, and should be accomplished thoroughly in the early stages of interpretive planning.

The plan should also address the methods to be used to tell the story of the hangars, and each of the aspects of the hangar's history will be presented—not only what will be said, but in what medium the story will be presented. Possibilities include presentations as part of a brochure; a wayside sign (either a free-standing sign or one that is part of a walking tour); exhibits (such as historic aircraft); presentation by an interpreter, or a combination of methods. Interpretive program options include:

- **Brochures** which would incorporate historic images of the Hayward Hangars;
- **Walking Tours** of the recreated hangar and trails through landing strip complex;
- **Signage and wayside displays** which would interpret the re-created landing strip, the hangars themselves, historic aircraft at the site the, and trails related to the heritage park;
- **Visitor Center**, a dedicated location for visitor orientation provided by one of the hangars;
- **Exhibits**, such as aircraft displays;
- **Multi-media presentations**, such as a digital oral history provided by living women pilots;
- **Interpreters** (first person, where the interpreter becomes a historical figure; or third person in which they describe events as a non-participant); or,
- **Docents** (individuals, such as members of the local pilot's association, who accompany visitors through an exhibit in a museum or historic site, describing what the visitor sees).

These interpretive options form just a portion of the overall vision provided by citizen groups. The future hangar museum complex would be connected through a series of trails to historic sites such as the Daly Mansion, the Stock Farm, and the Leonardi Homestead, which would serve as an interpretive center for the agricultural heritage of the Bitterroot Valley.

Conclusion

This plan integrates historic property considerations into overall planning related to airport improvements at the Hamilton/Ravalli County Airport. The hangars occupy the historic core of Ravalli County Aviation history and form the original location of the Hamilton Airport. The hangars occupy a unique place in Bitterroot Valley history, and possibly Montana state history, as it is unknown if other hangars used for WASP training are still in existence in Montana. Overall, the hangars are significant for their place in aviation history, women's history, and for their relationship to Dr. Herbert Hayward, who played an important role in the development of aviation in Montana, and was instrumental in securing the federal funding which supported the construction of the hangars during World War II.

The recommended mitigation measures provide a strong foundation for the future use, preservation, and interpretation of the hangars as the historic people and events they represent.

Consulted Sources

Bureau of Land Management/General Land Office Land Records Database (BLM/GLO)
2006 Land Patent Record. Available from BLM website, <http://www.glorerecords.blm.gov/patentsearch>.

Beye, Wendy and Deb Kleen.
1/19/2006. Meeting, Hamilton, MT.

Caldwell, Red.
12/15/2005 Meeting, Hamilton, MT

Centers, Ruth and Charles Duus.
2/7/2006. Interview, Hamilton, MT.

Duus, Charles.
2003 *Soaring With Eagles*. Pictorial Histories Publishing Company, Inc., Missoula, MT.

Ferguson, David,
2004 *Cultural Resources Inventory of the Ravalli County Airport, Hamilton, Montana*. GCM
Services, Butte, Montana.

McAlester, Virginia and Lee.
2000 *A Field Guide to American Houses*. Alfred A. Knopf, New York.

National Park Service
1990 *HABS/HAER Standards*. U.S. Government Printing Office, Washington, D.C.

National Park Service
1990, rev. 2002 National Register Bulletin 15, *How to Apply the National Register
Criteria for Evaluation*. U.S. Government Printing Office, Washington,
D.C.

Ravalli County Airport Board
2/7/2006 Meeting, Hamilton, MT.

Ravalli County Aviation Safety Foundation, Inc.
2005 Correspondence with Montana Preservation Alliance.

Ravalli County Aviation Safety Foundation, Inc.
2005 *Vision Statement: Farmers and Flyers Heritage Park*.

Ravalli County Historical Society.
Historic Images of the Ravalli County Airport and Hayward Flying Service.

State Historic Preservation Office.
2005-2006. Various project correspondence.

Appendices

Appendix A

Revised Hangar Site Forms

MONTANA HISTORIC PROPERTY RECORD

For the Montana National Register of Historic Places Program
and State Antiquities Database

Montana State Historic Preservation Office

Montana Historical Society

1410 8th Ave

P.O. Box 201202

Helena, MT 59620-1202

<p>County: Ravalli County</p>	<p>State Site Number: 24RA770</p>
<p>City/Town: One mile east of Hamilton, MT</p>	
<p>Historic Property Name: Hayward Flying Service Hangars</p>	<p>Historic Use: Airplane Hangars and flight training</p>
<p>Current Property Name: Daly Ditch Irrigation Co.</p>	<p>Current Use: Irrigation Co. offices, maintenance, storage</p>
<p>Property Address: 564 Tammany Road</p>	<p>USGS 7.5 minute Quad Name: Mountain House Year: 1964</p>
<p>Owner Name and Address: Daly Ditch Irrigation Company 564 Tammany Road Hamilton, MT 59804 x private <input type="checkbox"/> public Important: Land is owned by the Ravalli Co. Airport Authority; Structures owned by the Daly Ditch Co.</p>	<p>Legal Location: PM: MT Township: 11N Range: 3W SW¼ SW¼ SW¼ of Section: 15 Lot(s): NA Block(s): NA Addition: NA Year of Addition:</p>
<p>Original Owner: -</p>	<p>UTM Reference: <input type="checkbox"/> NAD 83 <input checked="" type="checkbox"/> NAD 27 Zone: 11 Easting: 721792 Northing: 5125037 <input checked="" type="checkbox"/> original location <input type="checkbox"/> moved Date of Move(s):</p>
<p>Dr. Herbert V. Hayward Hamilton, Montana</p>	<p>Construction Date: Hangar 1: 1934, 1942; Hangar 2: 1945 estimated X actual</p>
<p>Source of Information: Charles Duus, <i>Soaring With Eagles</i>, 2001</p>	<p>Source of information: Charles Duus, <i>Soaring With Eagles</i>, 2001. Local author and pilot.</p>
<p>Building Plan/Location Map: (include north arrow)</p>	<p>Architect: Unknown, probably none or standardized design.</p>
<p>See attached</p>	<p>Builder/Contractor: Federal--Civil Works Program (New Deal funded)</p>
	<p>Source of Information:</p> <ul style="list-style-type: none"> • Charles Duus, <i>Soaring With Eagles</i>, 2001; • Historic Photographs, Ravalli County Historical Society; • Wendy Beye and Deb Kleen, Interview, 1/19/2006; • David Ferguson, GCM Services, <i>Cultural Resources Inventory of the Ravalli County Airport, Hamilton, Montana</i>, 2004 • Montana State Historic Preservation Office.

	Building Materials: Foundation: None Exterior walls: Wood cladding Roof: Wood frame Other:
Office Use Only Eligible for NRHP: <input type="checkbox"/> yes Criteria: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> no Date:	Area of Significance: Period of Significance: Architectural Style: Property Type:
	Evaluator:

MONTANA HISTORIC PROPERTY RECORD

PAGE 2

Property Name: Daly Ditch Irrigation
 Company: Hayward Flying Service Buildings

State Site Number: 24RA770

Architectural Style: Quonset/Aviation and Vernacular

Property Type: Aviation

History of Property

Though land around the site was patented beginning in 1883, online General Land Office (GLO) show that the specific ground which encompass the site were not patented until 1890, when the NE quarter of the SE quarter was filed on by Thomas Romney. Following Romney's ownership, the land was probably acquired by mining baron Marcus Daly to form part of his vast Stock Farm estate.

In the 1920s, as the nation gained awareness of utility of flight, Ravalli County residents began to see the advantages of flight to meet local commercial and transportation needs. Local leaders sought a suitable landing field near Hamilton, and in 1934, property that made up a portion of Daly's historic Stock Farm was selected and leased (and later purchased) from the Daly estate. This drive to establish a Hamilton area landing field was led in part by Dr. Herbert Hayward, an important figure in local aviation history, who began his Hayward Flying Service at the site and built the air field's first hangar, soon after the air strip was completed.

Later in 1934, following federal approval, the federal Civil Works Program (CWP), began construction of the Hamilton Airport landing field. The original grass field was constructed in a "T" shape, with a north/south runway a quarter of a mile long and 400' wide, and a identically dimensioned, similar east-west runway that ran parallel to today's Tammany Lane, then referred to as "Airport Road." Dr. Hayward's original hangar, built in the early summer of 1934 and the original home of the Hayward Flying Service, was constructed just north of Tammany Lane, soon after the grass runways were completed. The east/west portion of the "T" runway strip lay just to the north of Dr. Hayward's original hangar. Hangar 1 was constructed in 1942 with U.S. War Department funds. The original hangar forms the rear portion of this new hangar. Further World War II-era alterations to this feature include a 1943 eastern addition to the 1942 hangar. In 1945, Hayward oversaw the War Department-funded construction of a second, larger Quonset-style hangar on the north side of the air strip to accommodate the growing number of aircraft at the air field.

After the war was over, the Hayward Flying Service provided flight training to returning soldiers under the GI Bill. By the summer of 1946, Dr. Hayward had retired from his company. In 1949, the Hamilton Airport runway was expanded to 3,800 feet, and in the 1950s the airport was subject to major renovation, which included a further runway extension. The hangar area was relocated to the northwest part of the field at that time, though the Hayward Hangars were left in place. During this era, aviation activities at the Hamilton Airport, included search and rescue operations in the nearby national forest, air freight, wildlife salting programs, aerial grass seeding, aerial spraying, and continued flight instruction.

The Hayward Hangars remained in their original location but no longer served to store aircraft. Ownership was transferred to the State Water Board and later sold to the Daly Ditch Irrigation Company. Since that time, the hangars and the surrounding grounds have been used by the Daly Ditch Irrigation Company for administrative offices, maintenance center, and vehicle and equipment storage.

Current Property Description

Currently the site consists of two main features consisting of a Vernacular-style hangar (feature 1) and the Quonset-style hangar (feature 2). The property is bounded by the east/west Tammany Road to the south of the site, pasture to the east, the Ravalli County Airport complex to the north, and an open field to the west. The historic grounds of the site have also been altered to fit current needs. An east/west grass runway once traversed the area between the hangars; that land is now used for parking and is littered with equipment.

Architectural Description

Feature 1: Hangar 1

Feature 1 is a generally square floor-planned airplane hangar that is actually comprised of three separate structures. What appears to be a rectangular, low-sloping gabled rear addition is actually the original hangar built by Dr. Herbert Hayward for his Hayward Flying Service. This hangar was probably built in 1934 after the grass runway was completed. While original cladding and roofing are covered by non-original materials, it appears that the roof of the original hangar is beginning to sag. The largest portion of the feature is a hangar built in 1942 to accommodate pilot training related to the war effort. In 1943, an addition was constructed on the east side of the hangar to serve as classrooms for pilot training. The original hangar now features non-original asphalt shingle siding and a non-original metal roof. The 1942 hangar is clad with flush horizontal wood that is deteriorating, and topped with non-original deteriorating rolled asphalt roofing. The 1943 addition is clad with asphalt shingle siding and roofed with non-original rolled asphalt material, with a metal stove pipe, concrete block chimney, and ventilation pipe extending above the roof surface.

The front (north) façade of the hangar now features a large centered double door. This elevation has been altered from its historic appearance, which once featured large east/west sliding doors (supported by beams which extended past the structure's eaves to support the sliding doors) and a bay door large enough to accommodate smaller aircraft. The "Hayward Flying Service" logo once centered above the door has been removed. The west elevation features no doors or fenestration. The rear (south) elevation forms the rear portion of the original hangar, and features a single door on the west end of the elevation, a centrally located double door, and an original wood-framed double-hung window. The east elevation of the feature is formed by the eastern exterior wall of the original hangar and east side of the classroom addition, with an off-set connection between the two portions of the feature. The original hangar portion of the elevation features a single original double-hung window on the south end of the elevation, flanked to the north by two newer fixed single-pane windows. The classroom addition features a single door on the south side of the elevation, and fenestration includes two fixed single-pane windows and a four-light window to the north of the door. The exposed, flat surface of a stone chimney separates the two single-pane windows. The original and 1942 hangars do not appear to have a foundation; it is unknown what foundation system the classroom addition may have.

Feature 2: Hangar 2

Feature 2 is a Quonset-style wood frame airplane hangar with a rectangular floor plan featuring horizontal flush wood paneling and non-original, deteriorating rolled asphalt roofing. The front (south) façade features false-front wings that once supported sliding front doors. This façade features four irregularly-sized, separate bay doors which allow for pedestrian and motor vehicle entrance and exit. This façade has been altered from its historic design, which once featured a symmetrically spaced large rectangular door that allowed for small airplane ground travel. The side (east and west) elevations feature the classic Quonset arched roof that reaches to ground level, with no fenestration. The rear (north) elevation features a shed-roof addition with a metal roof that is currently used for office space. Four fixed single-pane windows serve as fenestration along this elevation. The original open interior floor plan was altered after 1952 for current use as office space, workshop, and motor vehicle garage for the Daly Ditch Irrigation Company. The structure is without a permanent foundation, and is overall in a deteriorated state.

Construction History

Maps demonstrating buildings and structures (such as Sanborn Fire Insurance Co. maps) are not available for this part of Ravalli County. Author and pilot Charles Duus, who wrote *Soaring With Eagles* (2001), a history of Bitterroot aviation history, and who received flight instruction at the Hayward Flying Service in the 1940s, provided much of the chronology related to the hangar use and construction. Photographs of the hangars located at the Ravalli County Historical Society also provided information related to the construction history and historic uses.

Statement of Significance:

The Montana SHPO has determined that Site 24RA770 is eligible for the National Register. Feature 1 is determined as eligible under Criteria A for its association with early Montana aviation history, as well as its connection to the war effort. SHPO states that Hangar 2 is National Register eligible under Criteria C as a good example of utilitarian Quonset style construction popular during World War II. SHPO also noted that Feature 2 may also be eligible under Criteria A, but that its postwar contributions are not yet well documented. It is further recommended to SHPO that both hangars are eligible under Criteria B for their relationship with Dr. Herbert Hayward, who played an important role in the development of aviation in Montana, and was instrumental in securing the federal funding which supported the construction of the hangars during World War II.

Dr. Herbert V. Hayward moved to the United States from England in 1899, when he was 17 years old. After earning his medical degree, he became a doctor for the Northern Pacific Railroad. He left the railroad to practice medicine in the Bitterroot Valley in 1910.

While Dr. Hayward maintained his medical practice in Hamilton for many years, gaining a reputation as one of the foremost physicians in the treatment of Rocky Mountain Spotted Fever, aviation became his greatest passion. He became the founding father of Bitterroot Valley aviation as well as a strong advocate for Montana aviation. Hayward himself trained a number of pilots for service in World War II, and was a significant figure in the formation of the Montana Aeronautics Commission. Hayward played an important role in the purchase of the first Ravalli Co. airport site, and began his Hayward Flying Service at the current hangar location.

Soon after Pearl Harbor, it became obvious that the shortage of male pilots would have a serious, detrimental effect on the capabilities of the U.S. Army Air Force (USAAF). Military leadership began to seriously consider the use of women pilots for non-combat missions such as ferrying aircraft from factories to military bases, and towing drones/aerial targets. Squadrons were established separately (as the Women's Flying Training Detachment and Women's Auxiliary Ferrying Squadron (WAFS), respectively) in 1942 and then merged to form the Women Air Force Service Pilots (WASPs) in 1943.

Out of 25,000 applicants nationwide, 1,830 women were accepted into the WASP training program and 1,074 graduated. 38 WASPs died in service to their country, including Evelyn Sharp, who grew up in Nebraska but was born in Melstone, Montana. The WASPs were considered civil service employees and did not receive military status. On June 21, 1944, an act to give the WASPs military status was defeated. In late 1944, the USAAF disbanded the WASP effort. Finally, in 1977, President Jimmy Carter signed legislation granting the WASP military status and thus access to Veterans benefits.

The Hayward Flying Service played an important local role in homeland defense after the United States entered World War II. In early 1942, flight instructors and other personnel were secured which enabled the Hayward School to begin pilot training for wartime service. The instructional course offered to women pilots at Hamilton Airport was the first phase in the overall training program. Successful completion of the Hamilton flying course qualified them for advanced training at the Woman's Auxiliary Ferrying Service School at Avenger Field in Texas, the current home of the National World War II WASP Museum. In September 1943, the first class of five Montana women began their training at the Hayward Flying Service.

During the war, the Hayward Flying Service trained other young pilots who later served in World War II. Charles Duus, who later wrote *Soaring With Eagles* (2003), an account of the history of flight in the Bitterroot Valley, learned to fly at the Hayward Flying Service and served as a bomber pilot over Europe during World War II. He was shot down over Germany and spent the last months of the war in a prisoner-of-war camp before returning to life at the Bitterroot Valley and flying at the Hamilton Airport. Ruth Reese Centers, a local high school student, also received training at the Hayward school. She became the first licensed women pilot in Ravalli County. By the summer of 1946, Dr. Hayward had retired his company, though flying services continued under different ownership. The hangars are the only known, extant Ravalli County representations of the contributions of women pilots to war efforts under the WAFS and WASP programs; they may be the only such representations statewide. The features are significant in local aviation history, and represent the leading role of Dr. Herbert Hayward as a pioneer in Ravalli County aviation history.

Integrity:

Integrity is the ability of a property to convey its significance, and the National Register recognizes seven aspects or qualities that, in various combinations, define integrity. Integrity should be judged with reference to the particular National Register criteria or criterion under which a property is thought to be eligible. The seven aspects of integrity include Location, Design, Setting, Materials, Workmanship, Feeling, and Association.

Overall, the hangars have retained several aspects of integrity related to the recommended National Register criteria, A, B, and C. Both hangars have retained their historic *location* as the structures have never been moved. This aspect of integrity also contributes to the character of the hangar's *setting*. While the grass runway which historically ran between the two hangars has been lost, the hangars are still located close to the modern airport, at the south end of a working runway. Ongoing, nearby airplane traffic contribute to the hangar's retention of setting. Further, the structure's physical orientation still evokes the sense of space and separation once related to the runway which traversed the area between the structures.

The exterior design of the historic hangars has remained intact. Historic images of the Quonset-style design of Hangar 2 demonstrates that the historic form, structure and style have been retained, despite impermanent alterations to the interior of the hangar. Hangar 1, meanwhile, has also retained its historic design, a product of the war effort and pilot training program as organized by Dr. Herbert Hayward—the form and style of original hangar is definable, as is the 1942 hangar and the 1943 classroom addition. These historic-period additions are critical to the history of hangar as well as the related criteria, representing the local aviation and women's history that makes the site historically significant.

In general, the *materials* critical to the construction of the hangars remain intact. These relatively simple structures are comprised of the original wood framing—evident in photographs of the hangars—and wood cladding typical of the era. While Hangar 1 exterior cladding in places is comprised of asphalt shingles, the original wood siding remains beneath the more modern material. Likewise, while roofing material is comprised of non-original rolled asphalt material and metal sheathing, the historic materials are located beneath these changes. It should be noted that most later alterations are readily reversible. The addition of non-historic cladding and roofing overlies original fabric while interior walls and elements added to the hangars could easily be removed to restore the historic era.

The site has retained a high level of physical integrity and today conveys its historic use as the local center of aviation. The hangars remain in their historic locations, remain on airport land and are adjacent to the current airport complex. Further, the hangars have retained their original design, and the historic-era additions to Hangar 1 are directly related to the historic significance of the site. Original materials and the original structural and exterior systems. The hangar's retention of their historic location, setting, design and materials contribute to the integrity of the site's *feeling*, and the physical integrity of the hangars supports the historical *association* with local aviation history and women's history, as well as Dr. Herbert Hayward, who played an important role in the development of aviation in Montana, and was instrumental in securing the federal funding which supported the construction of the hangars during World War II.

Eligible for NRHP: ☒ Yes ☐ No

Criteria ☒ A ☒ B ☒ C ☐ D

Area of Significance: Local Historical Significance; Local Significant Individual; Architectural Significance

Period of Significance: 1934-1945

Information Sources/Bibliography:

Bureau of Land Management/General Land Office Land Records Database (BLM/GLO)

2006 Land Patent Record. Available from BLM website, <http://www.glorerecords.blm.gov/patentsearch/>.

Beye, Wendy and Deb Kleen. Interview, 1/19/2006.

Centers, Ruth, and Charles Duus. Interview, 2/7/2006.

Duus, Charles.

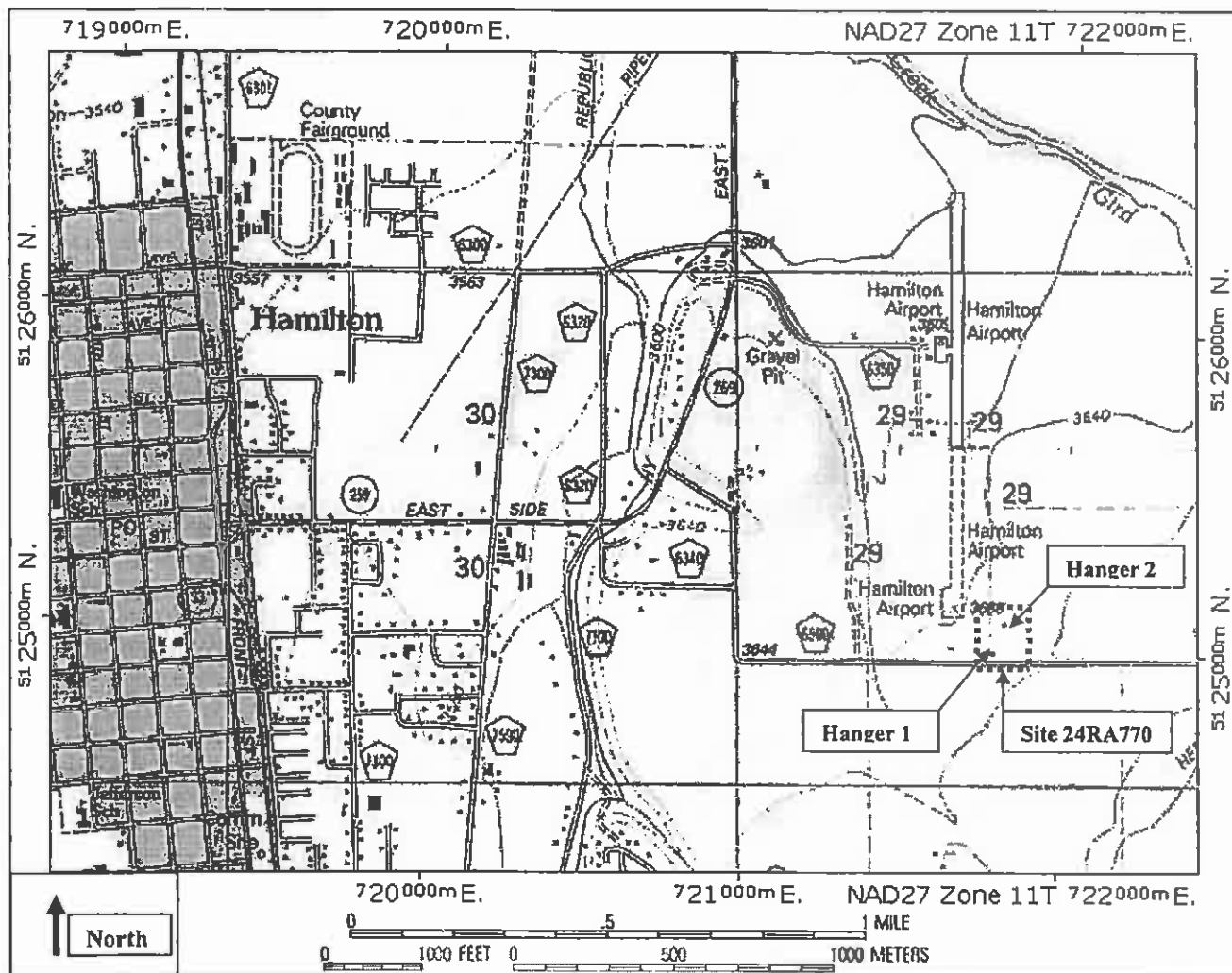
2003 *Soaring With Eagles*. Pictorial Histories Publishing Company, Inc.

Ferguson, David,

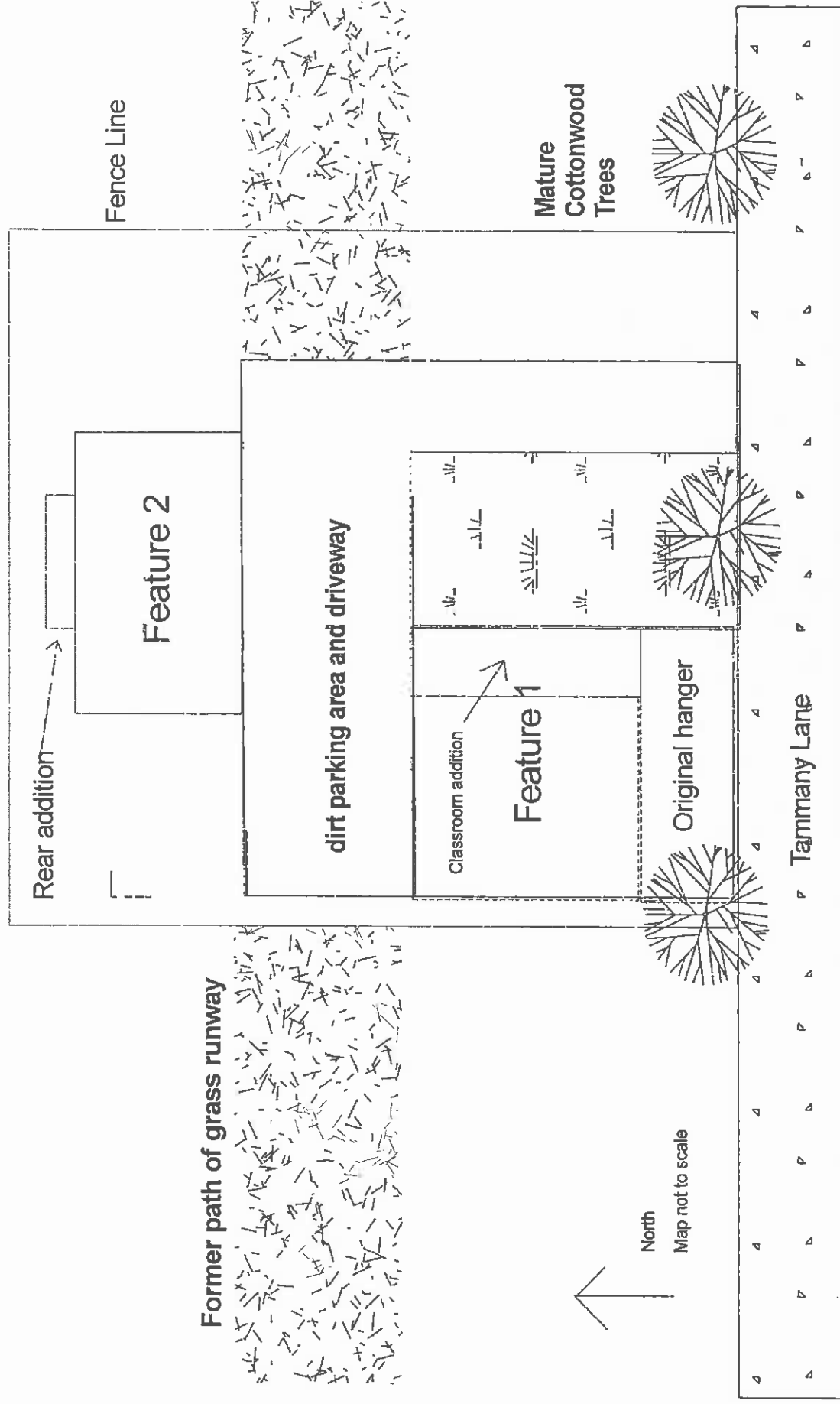
2004 *Cultural Resources Inventory of the Ravalli County Airport, Hamilton, Montana*. GCM Services.

Ravalli County Historical Society. Historic Images of the Ravalli County Airport and Hayward Flying Service.

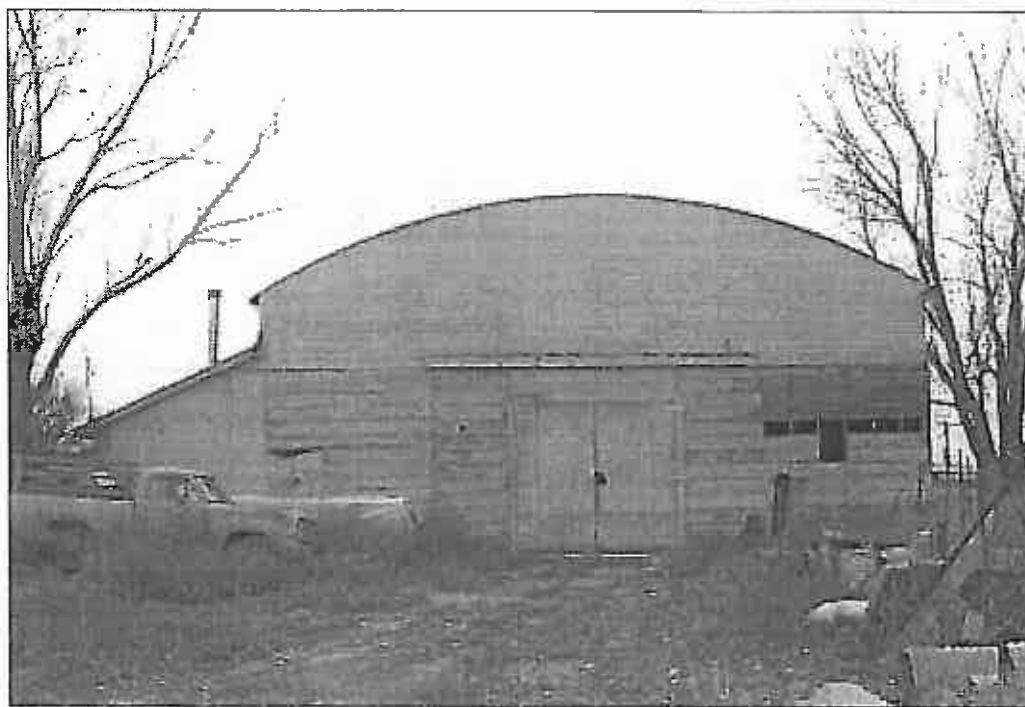
Location Map for Site 24RA770



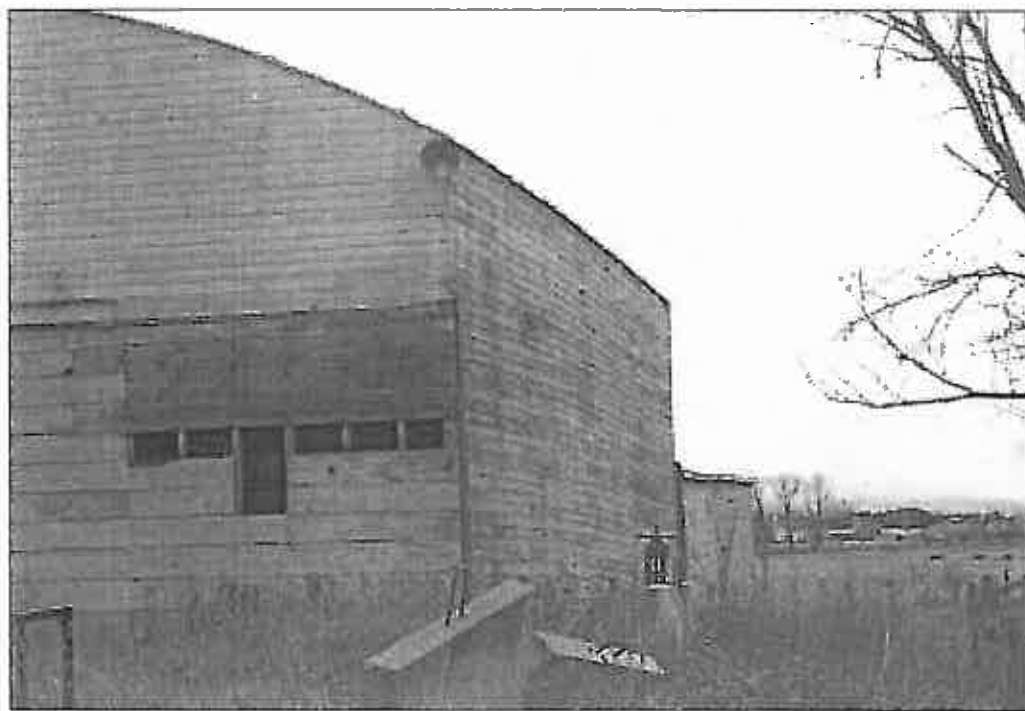
Site Plan Sketch Hayward Flying Service Hangers



Photographic Record Form ~ Site 24RA770
Feature 1



Feature 1, facing south.



Feature 1, facing south, demonstrating west elevation.



Feature 1, facing north.



Feature 1, facing west



Feature 1, historic image facing south.

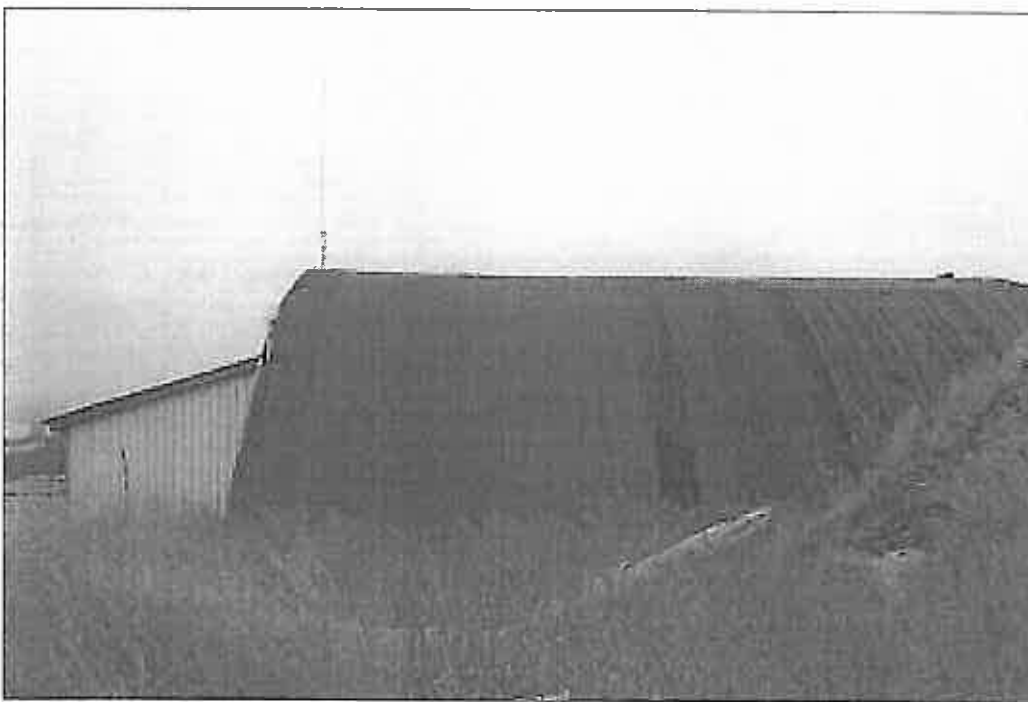


Feature 1, historic image facing west.

Feature 2



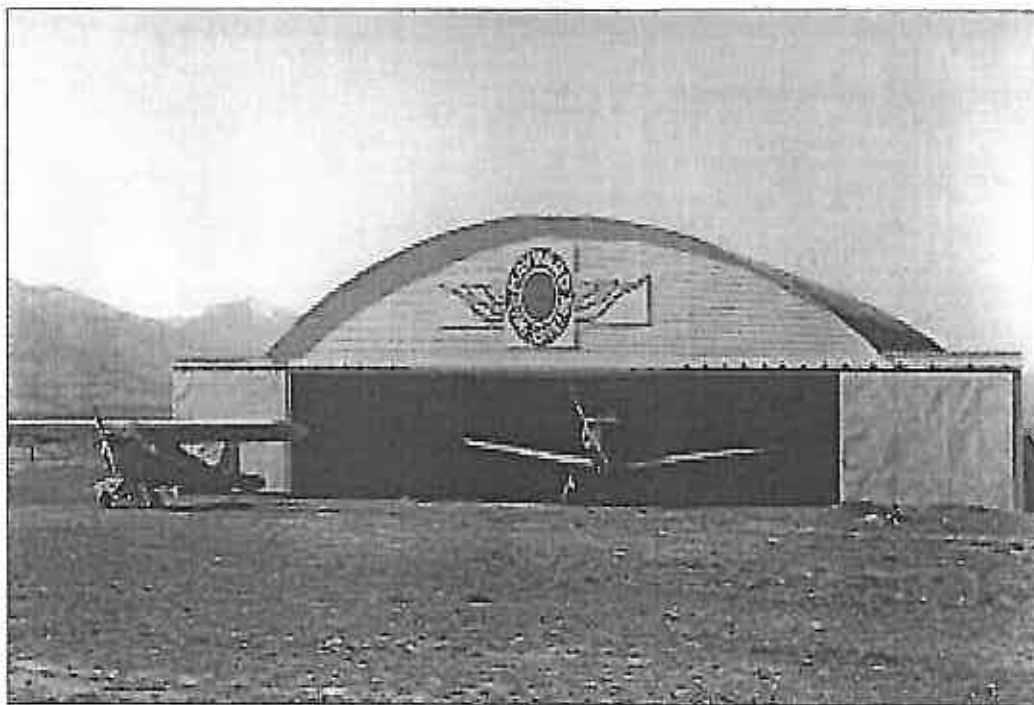
Feature 2, facing north.



Feature 2, facing east.



Feature 2, original interior framing and wall alteration (right)



Feature 2, historic image facing north



Site 24RA770, property view facing south.

Appendix B

GCM Cultural Resource Inventory Report

A CULTURAL RESOURCE INVENTORY
OF THE RAVALLI COUNTY AIRPORT,
HAMILTON, MONTANA

Prepared for

Morrison-Maierle, Inc.,
Bozeman, Montana

By

David Ferguson
GCM Services, Inc.
Butte, Montana

May 2004

TABLE OF CONTENTS

INTRODUCTION	1
PHYSICAL SETTING.....	1
HISTORICAL OVERVIEW	5
PRELIMINARY RESEARCH	5
FIELD METHODS	5
National Register of Historic Places (NRHP) Evaluations	6
FIELDWORK RESULTS	6
SITE NARRATIVES	6
Site 24RA764 The Hedge Ditch	6
Site 24RA769 The Leonardi Place.....	9
Site 24RA770 The Daly Ditch Irrigation District Buildings.....	13
CONCLUSIONS	16
REFERENCES	17
APPENDIX A: MONTANA CULTURAL RESOURCES INVENTORY SITE FORMS	

LIST OF FIGURES

Figure 1. The general project area on the USDA Forest Service Bitterroot National Forest visitor's map.....	2
Figure 2. The project area on the USGS <i>Hamilton South</i> (1964), <i>Mountain House</i> (1964), <i>Hamilton North</i> (1967) and <i>Corvallis</i> (1967) 7.5-minute topographic quadrangles.	3
Figure 3. Project area overview, looking north from south end of the hangar area.	4
Figure 4. Project area overview, looking south from the same location in NESW Section 29.	4
Figure 5. A diversion gate on Hedge Ditch in SWSENE 32, T6N R20W, looking east.	7
Figure 6. Sketch map of Site 24RA764. Map from <i>Water Resources Survey: Ravalli County, Montana</i> , published by the State Engineer's Office, Helena (1958).	8
Figure 7. Looking north at the Leonardi [Pendergast] house (Feature 1) from Golf Course Road.	11
Figure 8. Sketch map of Site 24RA769.	12
Figure 9. Photo of Hangar 1 (Feature 1) looking northwest.	14
Figure 10. Photo of Hangar 2 (F2) looking north (the office of the Daly Ditches Irrigation District).	14
Figure 11. Sketch map of Site 24RA770.	15

INTRODUCTION

Morrison-Maierle, Inc., of Bozeman, Montana, is planning future improvements at the Hamilton / Ravalli County Airport located about two miles east of Hamilton, Montana. The Area of Potential Effect (APE) is defined as the airport property. The irregularly shaped APE is approximately 11,300 feet long (north to south) by a maximum width of 3000 feet (east to west). The airport property covers approximately 420 acres. Table 1 lists the legal location of the project area.

Table 1. Legal location of the project area.

Township 6 North, Range 20 West

WSWNE, WWSE, EESW, ESENW, SSSWSESW Section 20
NSWNW, EW, WWNE, WNWSE, WWSESE Section 29
NENW, WWNWNE Section 32

Morrison-Maierle, Inc., contracted GCM Services, Inc., Butte, Montana to conduct an intensive (BLM Class III) cultural resource inventory of the airport property. This work was conducted to satisfy federal and state legislation requiring cultural resource inventory in compliance with the National Historic Preservation Act (Public Law 89-665, as amended), Executive Order 11593 (Protective and Enhancement of the Cultural Environment), and the National Environmental Policy Act and other state and federal legislation. The principal investigator for this project was David Ferguson, archaeologist, who was responsible for the overall project management and inventory. Ferguson and Walker Vaught conducted an intensive pedestrian inventory of the APE on May 6th and May 13th, 2004. Figure 1 shows the general project area on the USDA Forest Service Bitterroot National Forest visitor's map. Figure 2 shows the project area on the USGS *Hamilton South* (1964), *Mountain House* (1964), *Hamilton North* (1967) and *Corvallis* (1967) 7.5-minute topographic quadrangles.

The primary objective of the cultural resource inventory is to identify any cultural sites or artifacts over 50 years old that may be impacted by the proposed undertaking. Any identified sites would be assessed as to their significance in terms of the National Register of Historic Places (NRHP). A file search of existing cultural records research was conducted by the Montana State Historic Preservation Office to identify any previously recorded cultural sites in the area (Murdo 2004). One previously recorded site, the Hedge Ditch, 24RA764, crosses the airport property.

PHYSICAL SETTING

The Ravalli County airport lies about two miles east of Hamilton in the southern Bitterroot Valley. The north-flowing Bitterroot River is the primary drainage. The valley floor lies between 3,200 and 4,000 ft in elevation and is flanked by the Bitterroot mountains to the west and the Sapphire Mountains to the east. The vegetation community is classified as "Intermountain Valley Grassland and Meadow" (Payne 1973). Soil consists of well developed loam overlying mountain glacial till (silt and gravel). The elevation at the terminal area is 3,609 ft (1,100 m) above mean sea level. The majority of the APE has been farmed in the past. A significant portion has been graded and leveled, including the paved landing strip, apron and hangar area. Figures 3 and 4 are overview photographs of the APE.

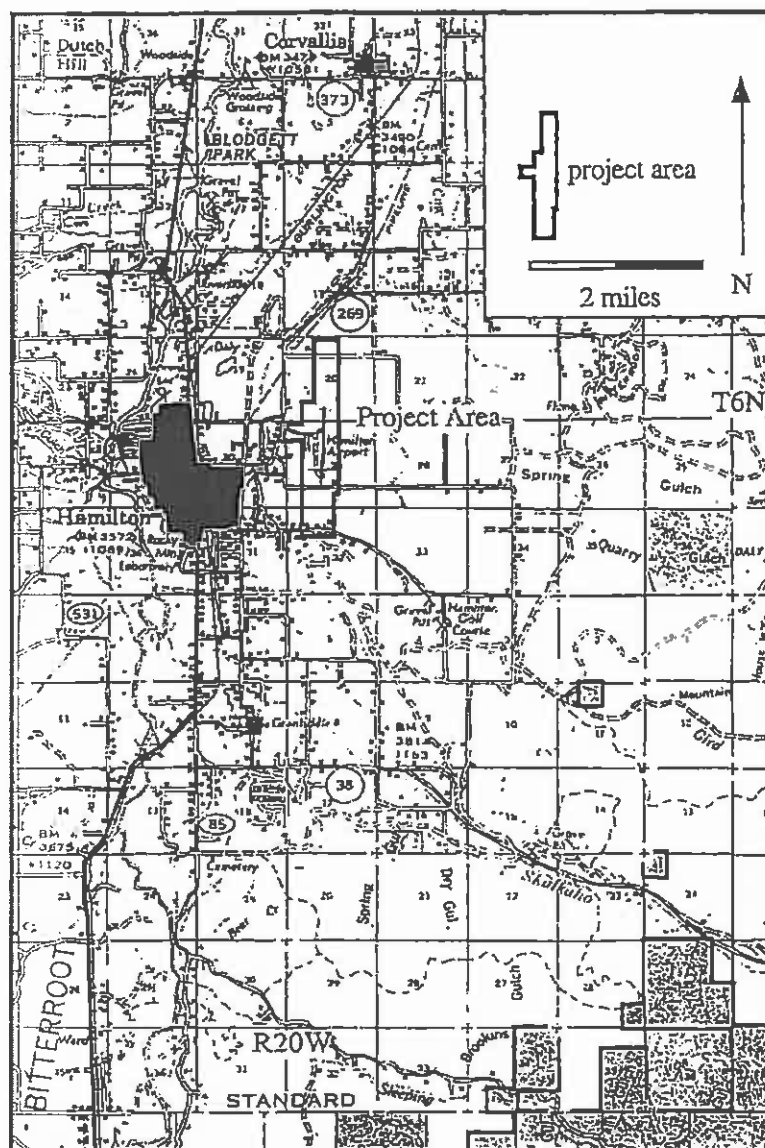


Figure 1. The general project area on the USDA Forest Service Bitterroot National Forest visitor's map.

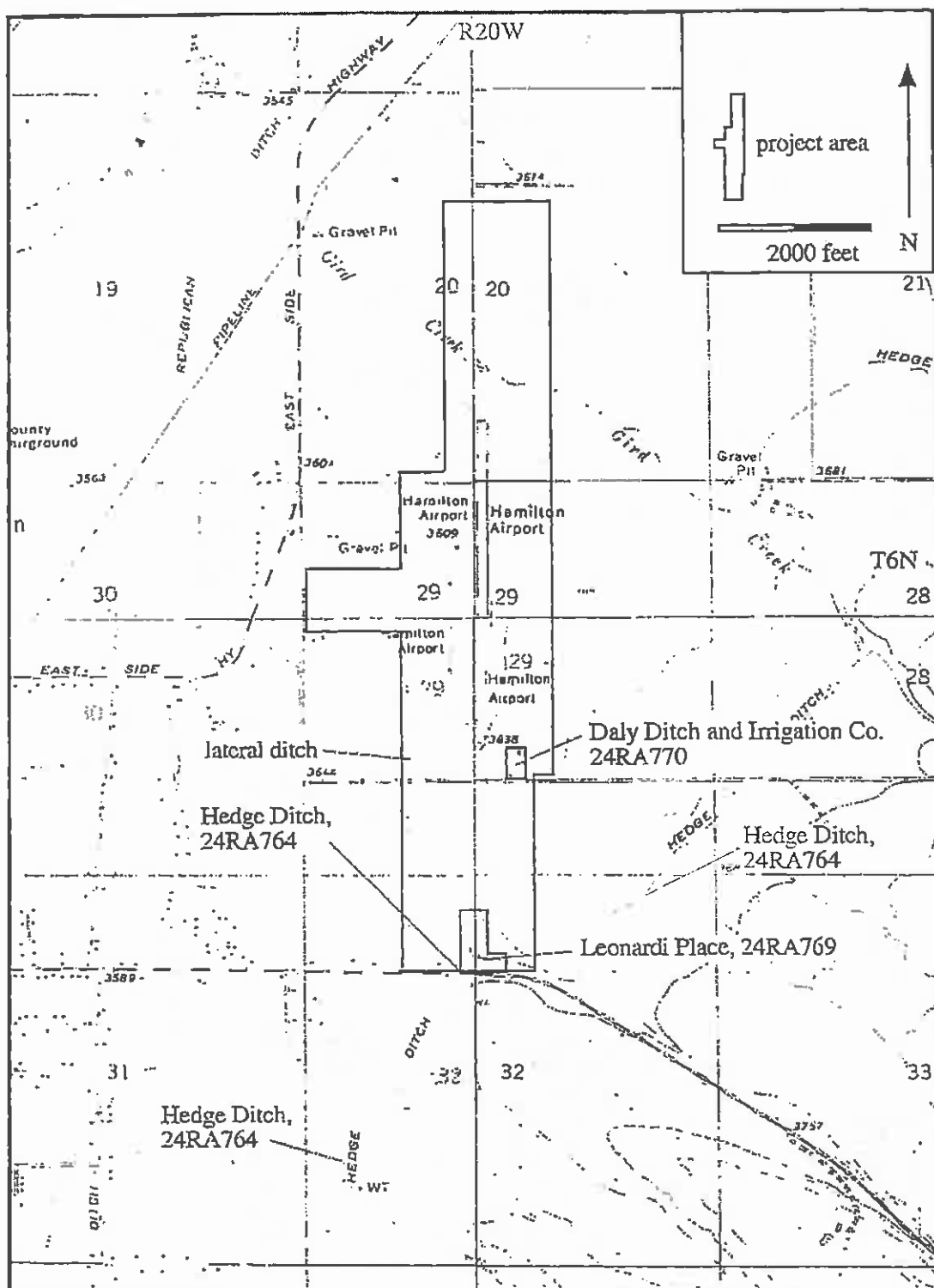


Figure 2. The project area on the USGS *Hamilton South* (1964), *Mountain House* (1964), *Hamilton North* (1967) and *Corvallis* (1967) 7.5-minute topographic quadrangles.

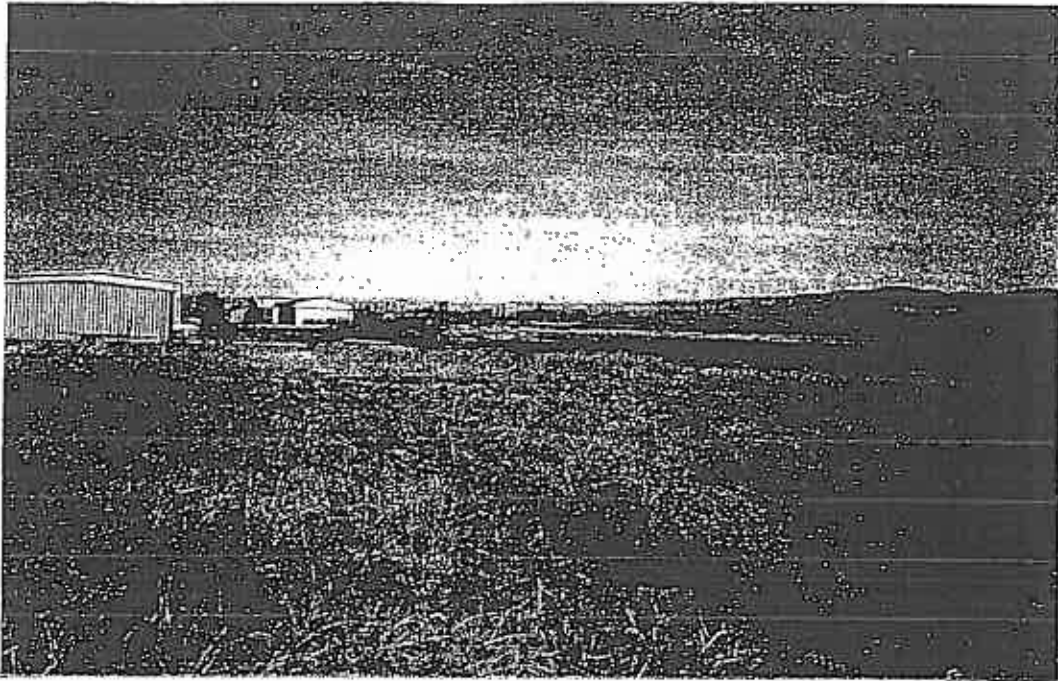


Figure 3. Project area overview, looking north from south end of the hangar area.



Figure 4. Project area overview, looking south from the same location in NESW Section 29.

HISTORICAL OVERVIEW

The Bitterroot Valley was the first permanently settled area in Montana. Jesuit missionaries were the first to irrigate crops in this valley, in the year 1842. By 1860, the Mullan road was completed and the first settlers began to arrive in the valley. In 1865 the first Montana Territorial Assembly created Missoula county, which incorporated the Bitterroot Valley, formerly a part of the Idaho Territory. In the 1880s, Butte Copper King Marcus Daly purchased his 20,000 acre Stock Farm and established the town of Hamilton. Here, Daly built a huge lumber mill through the Anaconda Mining Company. Daly built his summer mansion on the Stock Farm near Hamilton.

Daly began to construct an extensive irrigation system for his properties and the surrounding area. The arrival of the Northern Pacific Railway in Missoula and the subsequent development of the Missoula and Bitterroot Railroad in 1887 helped create a flourishing agricultural economy in the valley. A creamery, several dairies, orchards and produce farms were developed in these years in addition to livestock production. Daly established a premier racehorse breeding program at the Stock Farm. After Daly's death in 1900, his unfinished irrigation plans were taken over by the Bitterroot Irrigation Company and the Ravalli Land and Irrigation Company. The Hedge Ditch (24RA764) was originally constructed in the 1890s as part of what was then known as the Daly Ditch Project. All rights-of-way and water rights for this system were conveyed by Margaret P. Daly, as executrix of the Marcus Daly Estate, to the Ravalli Land and Irrigation Company in the early 1900s. The Hedge Ditch properties were conveyed to the State Water Conservation Board on October 1, 1942. The canal is currently administered by the Daly Ditch Irrigation District (Vertical File at Bitterroot Historical Society; State Engineer's Office 1958).

The Ravalli County airport was planned in 1945 and was built in 1946 and 1947. Dr. Herbert Hayward, chairman of the County Airport Commission and owner of Hayward Flying Service apparently built the first hangar (now part of the Daly Ditch Irrigation District offices complex) in 1940. The other early hangar that still standing (at site 24RA770) was built in 1946 or 1947. In the original airport configuration, the main north-south runway ran between these structures, a short distance south of the current alignment. The hangar site was abandoned for the current airport location at an unknown time. The two original hangar buildings were acquired by the State Water Conservation Board around 1952. The State Water Conservation Board had been conveyed ownership of the former [Marcus] Daly Ditch Project from the Ravalli Water User's Association. The Daly Ditch and Irrigation District formed in the 1980s and now own the buildings at the site and operate the irrigation district (Bitterroot Historical Society Library Vertical File n.d.; Western News 1945; Ashley 1948).

PRELIMINARY RESEARCH

Prior to entering the field, a cultural resource file search was requested from the cultural records manager at the Montana State Historic Preservation Office (SHPO) (Murdo 2004, SHPO project no. 2004050407). The file search revealed one recorded historic site, the Hedge Ditch, 24RA764 (Ferguson 2003) in the project area. The canal passes through the southern end of the airport property and has a minor, unnamed lateral that extends northerly into the southwest part of the airport property. Operations at the airport property will not impact this site, which is currently in use.

FIELD METHODS

The pedestrian survey was conducted at a Bureau of Land Management Class III level. The project area was photographed in color film. The majority of the project area has poor surface visibility due to vegetation cover and is currently farmed or has been cultivated in the past. The pedestrian examination focused on undisturbed areas within the APE.

National Register of Historic Places (NRHP) Evaluations

Two of the sites found during the project were evaluated in terms of the NRHP. Evaluated was each site's integrity of location, design, setting, materials, workmanship, feeling, and association, and its ability to meet any of the following NRHP criteria:

- Criterion A: The site is associated with events that have made a significant contribution to the broad patterns of our history.
- Criterion B: The site is associated with the lives of persons significant in our past.
- Criterion C: The site embodies the distinctive characteristics of a type, period, or method of construction, or that represented the work of a master, or that possesses high artistic values, or that represented a significant and distinguishable entity whose components may lack individual distinction.
- Criterion D: The site has yielded or may be likely to yield information important in prehistory or history.

Historic sites were first placed within the context of regional, as well as local, broad patterns of history. Eligibility was then based on the site's ability to fulfill one or more of the four NRHP criteria list above in addition to meeting the requirements of integrity as outlined by the National Register.

FIELDWORK RESULTS

The Leonardi Farm complex, 24RA769, and a pair of ca. 1940s hangars, 24RA770, now housing the shop and offices of the Daly Ditch Irrigation District were located and recorded in the APE. The narrative description of these sites follows. Completed Montana Site Inventory Forms are attached as Appendix A. The site forms contain photographs and additional information for the sites. An additional photograph was taken of the Hedge Ditch, 24RA764, where it crosses the Leonardi Farm complex. A small diversion gate, apparently modern, was noted in this location. No additional documentation was considered necessary for the ditch.

SITE NARRATIVES

Site 24RA764 The Hedge Ditch

Legal Location: NENW Section 32, T6N R20W (for this project - see linear description below)

USGS Map: Hamilton South

Elevation: 3,680 ft

Site Type: Historic Irrigation Feature

Site Photo: Figure 5

Site Map: Figure 6

Site narrative: The site consists of the historic route of the Hedge Ditch, an irrigation canal that diverts from the Bitterroot River in the SE NW Section 11, T4N R21W and irrigates land in Sections 13, T5N R21W; Sections 5, 7, 8 and 18, T5N R20W; Sections 3, 4, 8, 9, 10, 16, 17, 19, 20, 21, 22, 29, 30, 31 and 32, T6N R20W; and Sections 22, 26, 27, 28, 33, 34 and 35, T7N R20W. The unlined ditch is about 6-8 ft wide and 4 ft deep. The original recording documents the ditch's confluence with Skalkaho Creek where a modern concrete and steel head gate controls flow out of the creek. The Hedge Ditch passes through the current study area in

NENW Section 32, T6N R20W. A small diversion gate and a lateral ditch were observed in this area.

The Hedge Ditch was originally constructed by the late Marcus Daly, in the 1890s with all rights-of-way and water rights conveyed by Margaret P. Daly, as executrix of the Marcus Daly Estate, to the Ravalli Land and Irrigation Company. The Hedge Ditch was later conveyed to the State Water Conservation Board on October 1, 1942.

NRHP Evaluation: This site is unevaluated for the NRHP. It is still in active use and will not be affected by any proposed undertaking at the Ravalli County Airport.



Figure 5. A diversion gate on Hodge Ditch in SWSENE 32, T6N R20W, looking east.

Site 24RA769 The Leonardi Place

Legal Location: WSENEENW, SESENEENW, SWNEENENW Section 32, T6N R20W

USGS Map: *Hamilton South* (1964) and *Mountain House* (1964).

Elevation: 3,680 ft (1,122 m)

Site Type: Historic Farmstead

Site Photo: Figure 7

Site Map: Figure 8

Site narrative: The 900 ft north-south by 600 ft east-west building complex consists of an 1880 residence and a cluster of farm buildings dating from 1880 to present, including one small structure moved on site in the past year. There are 11 primary structures on the site. The site was once part of the Pendergast Farm, which was a part of Marcus Daly's famous Stock Farm complex. Pendergast was a foreman on the Daly Stock Farm. August Leonardi purchased the property from the Stock Farm (Daly Estate) in 1937. August's son, Robert bought the property from him 1972, and sold the property to the county airport within the past year.

Feature 1 is a 24 by 20 ft two-story, clipped gable residence built in 1880 (Ravalli County Assessor / Montana Department of Revenue). The house has a concrete foundation with a partial basement. It is sided with weatherboard wood siding. Windows are one-over-one light, except for an oversized shop front window to the left of the front entrance. The front entrance has a porch roof with lattice trellises and a simple frieze treatment at the eaves. A cellar door is found on the west side. The house is built with 30 ft continuous 2x6 frame studs (balloon framing) that extend from the foundation to the top of the upper story. The wood-shingled roof has an interior gable, corbeled chimney of red brick.

A 16 by 16 ft one-story gable-roofed extension on the back (north side) houses the kitchen. A 8 by 16 ft shed-roofed, enclosed entry room extends to the west side of the extension. It has a nine paned glass porch window facing to the west. A porch was removed from this side entry (Robert Leonardi, personal communication). A red brick chimney with a gas or oil furnace insert stove pipe marks the location of the original wood stove.

A 20 by 15 ft hipped-roof room extends from the east side of the extension. It appears to be an early addition to the original structure, based upon the rock and concrete foundation and awkward roofline tie-in. It has a wood-shingled roof and covered rafters at the eaves. There is an entrance on the north side. Old one-over-one light window openings have been sided over on the east and north walls and have been replaced with smaller 1x1 sliding windows. All of these components were on the house when August Leonardi bought the place in 1937 (Robert Leonardi, personal communication).

Feature 2 is a 18 by 66 ft gable-roofed bunkhouse. It has weatherboard wood siding, twin interior corbeled chimneys of red brick and a wood-shingled roof (except on the north side, which has been re-roofed with modern metal roofing). All of these elements are identical to the house, suggesting that it has a contemporary date of construction. It has two entrances on the south side. Six window openings on the south and north sides and one each on the east and west ends have been shuttered. Their size suggests that they were one-over-one light identical to the main residence. This structure once housed the several farm hands required to run the operation, but has lately been used as granary, leading to accelerated deterioration of the structure.

Feature 3 is a woodshed with privies attached to each end. The structure is dilapidated.

Feature 4 is a 20 by 24 ft single vehicle garage. This frame structure was once the quarters for a Chinese cook. It was built in 1910. It was moved and converted to a garage, by the addition of a sliding door on the south side, by August Leonardi (Robert Leonardi, personal communication).

Feature 5 is a small tack shed that has recently been moved onto the property by the sub-lessee.

Feature 6 is a gable roofed chicken coop, lately used as a storage shed. It probably was built by August Leonardi after 1937.

Feature 7 is a 24 by 60 ft pole shed covered with corrugated tin or aluminum. It was built in 1950 by August Leonardi and is used as a farm implement shed. A large horse barn once stood in this location (Robert Leonardi, personal communication).

Feature 8 is a small shed located on the north end of Feature 7. It has vertical board and batten siding. It probably was built by August Leonardi after 1937.

Feature 9 is a composite of two gable-roofed sheds for housing farm equipment. It has vertical board and batten siding and a metal roof. It probably was an original structure of the property, but was undoubtedly modified by August Leonardi after 1937.

Feature 10 is a 30 by 120 ft gable-roofed barn. It has wood a frame resting on rock footings. It has vertical board and batten siding and a tin roof with twin gabled cupolas. A sliding garage door is retrofitted to the south end. Twelve four-pane windows once lined the east and west sides but most are now broken out and are simply square openings now. This is believed to be an original structure to the property, but it has been re-roofed and modified internally and externally by August Leonardi.

Feature 11 is a small granary of indeterminate vintage. Feature 12 is a modern (1960) 22 by 44 ft pole shed structure for housing hay.

Feature 13 is a small dump related to the property. It contains a GM truck frame, window counterweights, a wagon wheel rim, hand forged chain links, a shovel head, tin roofing material, implement parts including a seeder, primitive bricks, wire, enamel ware, green glass, window glass and six piles of field cobbles.

The property has a long history. According to county assessment records (Assessor Code 718800) the house and principal structures were built in 1880. The Chinese cook's quarters (now a garage) was built in 1910. A metal shed (Feature 7) was built in 1950. A hay shed (Feature 12) was built in 1960 and a tack shed (Feature 5) was moved onto the property in the past year.

Copper King Marcus Daly built his summer residence and 22,000 acre Stock Farm in the Bitterroot Valley in 1880. The property consisted of several adjoining farms and was renown for its high quality of agricultural production. An extensive irrigation system, including the Hedge Ditch, which passes through the site complex, was a key feature of the Stock Farm. Here Daly's numerous employees had several dairy operations, several apple orchards, hay production, livestock and most famous of all, his thoroughbred breeding program. The Pendergast Ranch, named for one of Daly's foremen, was initially a 132 cow dairy operation. It also raised 80 horses, had hay production and a small orchard, part of which still stands. The dairy supplied the nearby Hamilton Creamery, built in 1896. A water wheel in the adjacent Hedge Ditch canal powered the farm's blacksmith shop. With Daly's death in 1900, his widow began the process of selling peripheral properties of the Stock Farm. Part of the Pendergast Ranch was sold in a 1908 land sale, and the buildings that make up the site were sold to August Leonardi by Margaret P. Daly in 1937 (Vertical File at Bitterroot Historical Society; Western News 1956a, 1956b; Ravalli County Courthouse).

August Leonardi purchased the Pendergast Ranch in 1937. Leonardi's wife Pierina Boschet Leonardi emigrated from Italy as a child in 1890 and married August in 1924. She notes in a local history book that Marcus Daly's young son, accompanied as always by a bodyguard, rode up to

their place in a buggy for a visit one day. The Leonardi family raised sugar beets initially, and later raised several hundred hogs. The farm had electricity as of 1937 (Bitterroot Historical Society 1998:287-290). Robert Leonardi purchased the property from his parents in 1972. August Leonardi died in 1974 and Pierina (locally known as Pauline) died in 1989. The property was leased out for a few years before recently being sold to the airport (Robert Leonardi, Personal Communication; Western News 1974).

The physical integrity of the complex is generally good. The site still imparts the feeling of an 1880-1920s farm. All original structures still stand but are suffering from complete neglect over the past couple decades. The barn is listing and has extensive deterioration of its siding. All of the structures are in critical need of paint. Non-original structures have, at least, continuity of function, if not design. The 1950 metal equipment shed and the recently hauled-in tack room are intrusive to the historic appearance of the site.

NRHP Evaluation: The site is recommended as eligible for the NRHP under Criterion A for its association with the early development of agricultural settlement of the Bitterroot Valley. Although the property was once a component farm of the Marcus Daly Stock Farm, it had little direct connection to Daly himself or his historical significance and so is not recommended as eligible under Criterion B (for association with persons of historical significance). The house (Feature 1), bunkhouse (Feature 2) and barn (Feature 10) are good examples of the architecture of the time and place. Although they are not particularly distinctive and each of these structures have some problems with structural integrity and condition, they could be restored to historic appearance. Therefore, these structures are recommended as eligible for the NRHP under Criterion C, for their embodiment of the distinctive characteristics of the type, period and method of construction.



Figure 7. Looking north at the Leonardi [Pendergast] house (Feature 1) from Golf Course Road.

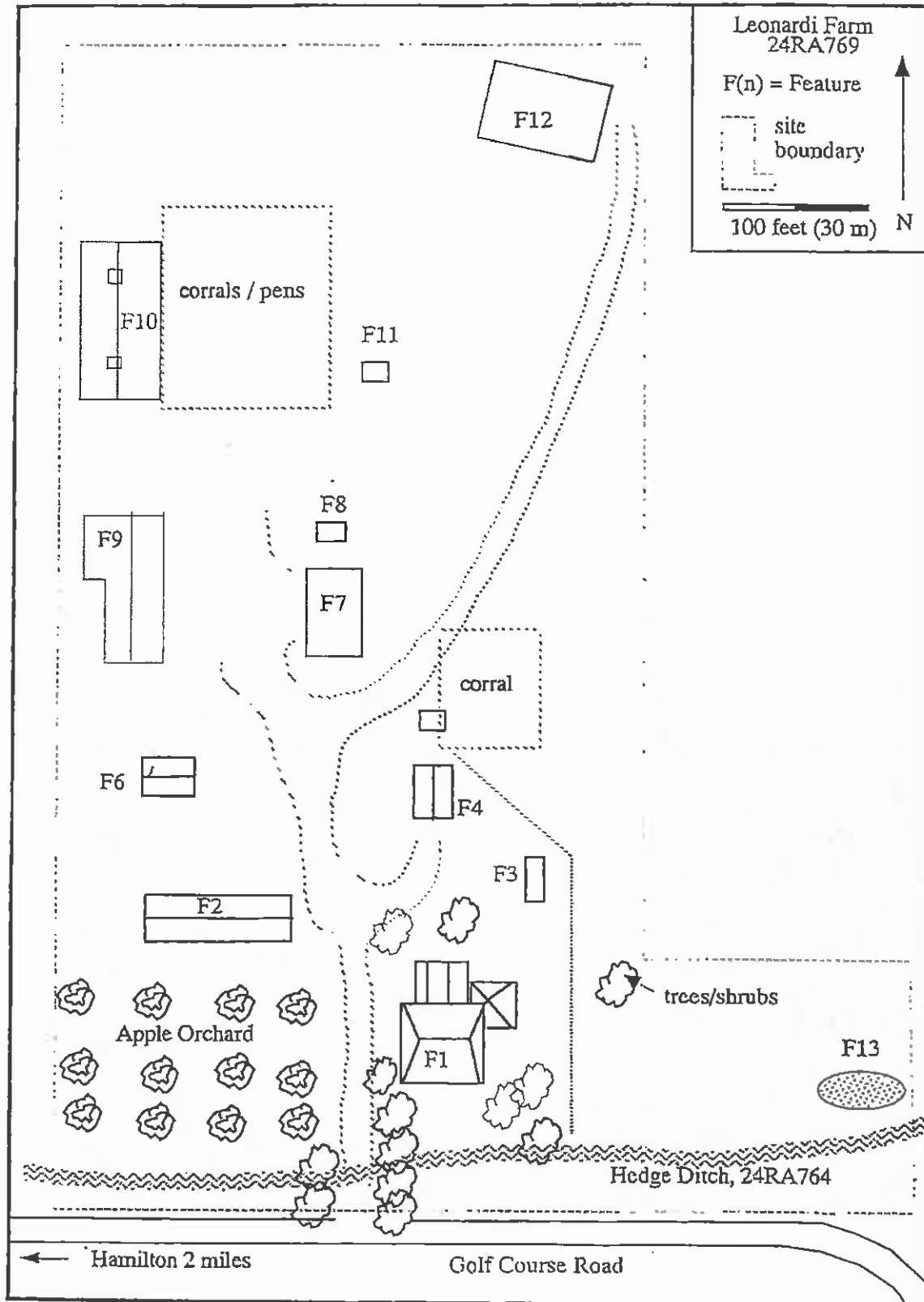


Figure 8. Sketch map of Site 24RA769.

Site 24RA770 The Daly Ditch Irrigation District Buildings

Legal Location: SWSWNWSE Section 29, T6N R20W

USGS Map: *Mountain House* (1964).

Elevation: 3,638 ft (1,109 m)

Site Type: Historic Irrigation

Site Photo: Figures 9 and 10

Site Map: Figure 11

Site narrative: The 400 ft north-south by 300 ft east-west building complex consists of two ca 1940s aircraft hangar buildings, with modern additions. It is located at 586 Tammany Road. One structure appears to be vacant and the Daly Ditches Irrigation District uses the other as a shop and office.

Feature 1 is a 42 by 36 ft barrel-roofed, wood-framed hangar. A 42 by 26 ft addition with a shallow gable roof is attached to the south end of the structure and a shed roofed addition, measuring about 12 by 36 ft is attached to the east side. The hangar and shed addition have rolled asphalt roofing, while the gable addition has a metal roof.

Feature 2 is a Quonset-style hangar, roughly 66 by 66 ft in dimension. False-front "wings" extend on either side of the south facing entrance, presumably these were designed to support large sliding doors. The original aircraft hangar doors have been removed and replaced with one traditional shop or garage door and three garage openings. The interior has been modified to house the office and shop for the Daly Ditch and Irrigation District. There is a shed roof addition on the north end. The addition has a metal roof and the hangar has rolled asphalt roofing.

The Ravalli County airport was planned in 1945 and was built in 1946 and 1947. Dr. Herbert Hayward, chairman of the County Airport Commission and owner of Hayward Flying Service apparently built the Feature 1 hangar in 1940. The Feature 2 hangar was built in 1946 or 1947. It is unknown when the various additions were installed. In the original airport configuration, the main north-south runway ran between these structures. The hangar site was abandoned for the current airport location about one half mile to the north at an unknown time after this. The two hangar buildings were acquired by the State Water Conservation Board around 1952. The State Water Conservation Board had been conveyed ownership of the former [Marcus] Daly Ditch Project from the Ravalli Water User's Association. The Daly Ditch Irrigation District formed in the 1980s and now own the buildings at the site and operate the irrigation district (Bitterroot Historical Society Library Vertical File n.d.; *Western News* 1945; Ashley 1948).

NRHP Evaluation: The hangars are barely of historic age and both structures have modern additions and modifications. Neither function in their original capacity. Therefore, the architectural and contextual integrity of the site is evaluated as low. The site is not associated with a person or event of historical significance. Neither structure has architectural significance or is likely to yield information important to local history. The site is recommended as not eligible for the NRHP under any criteria.

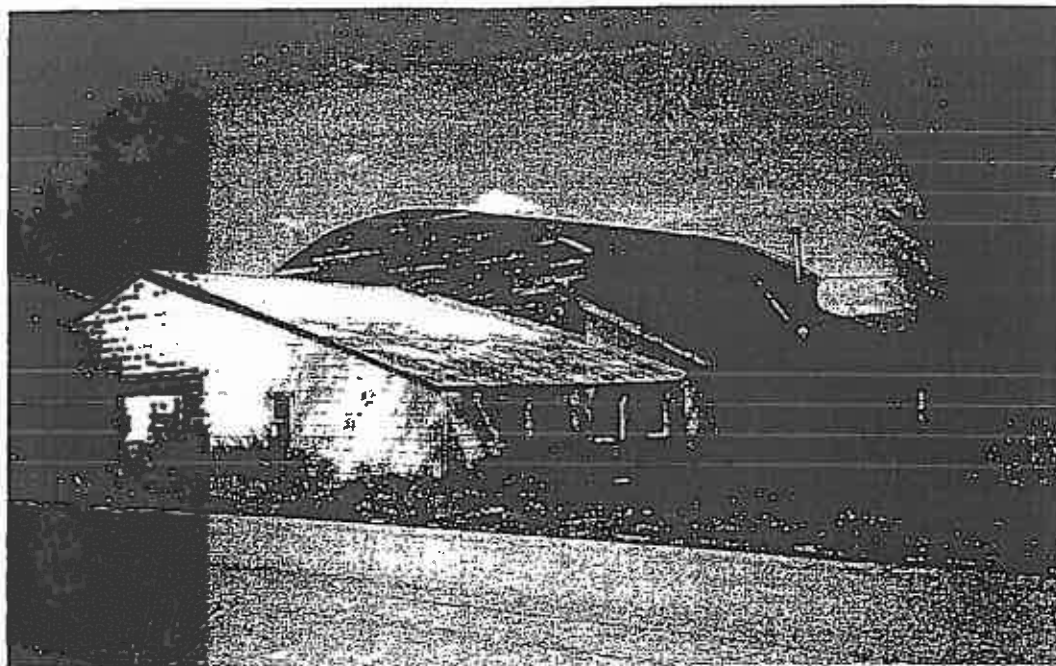


Figure 9. Photo of Hangar 1 (Feature 1) looking northwest.

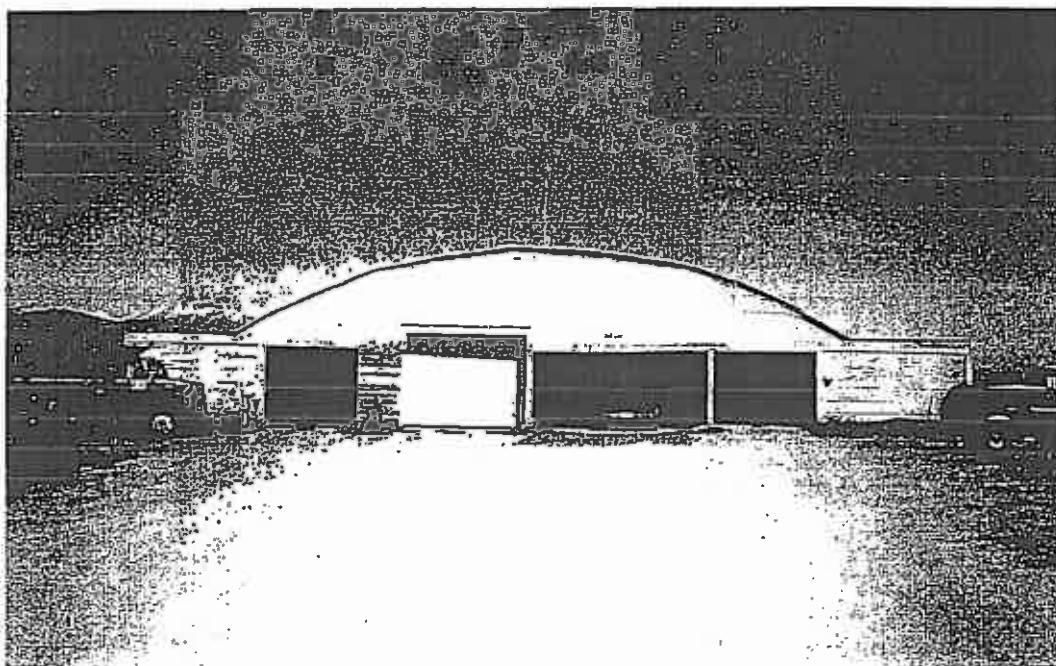


Figure 10. Photo of Hangar 2 (F2) looking north (the office of the Daly Ditches Irrigation District)

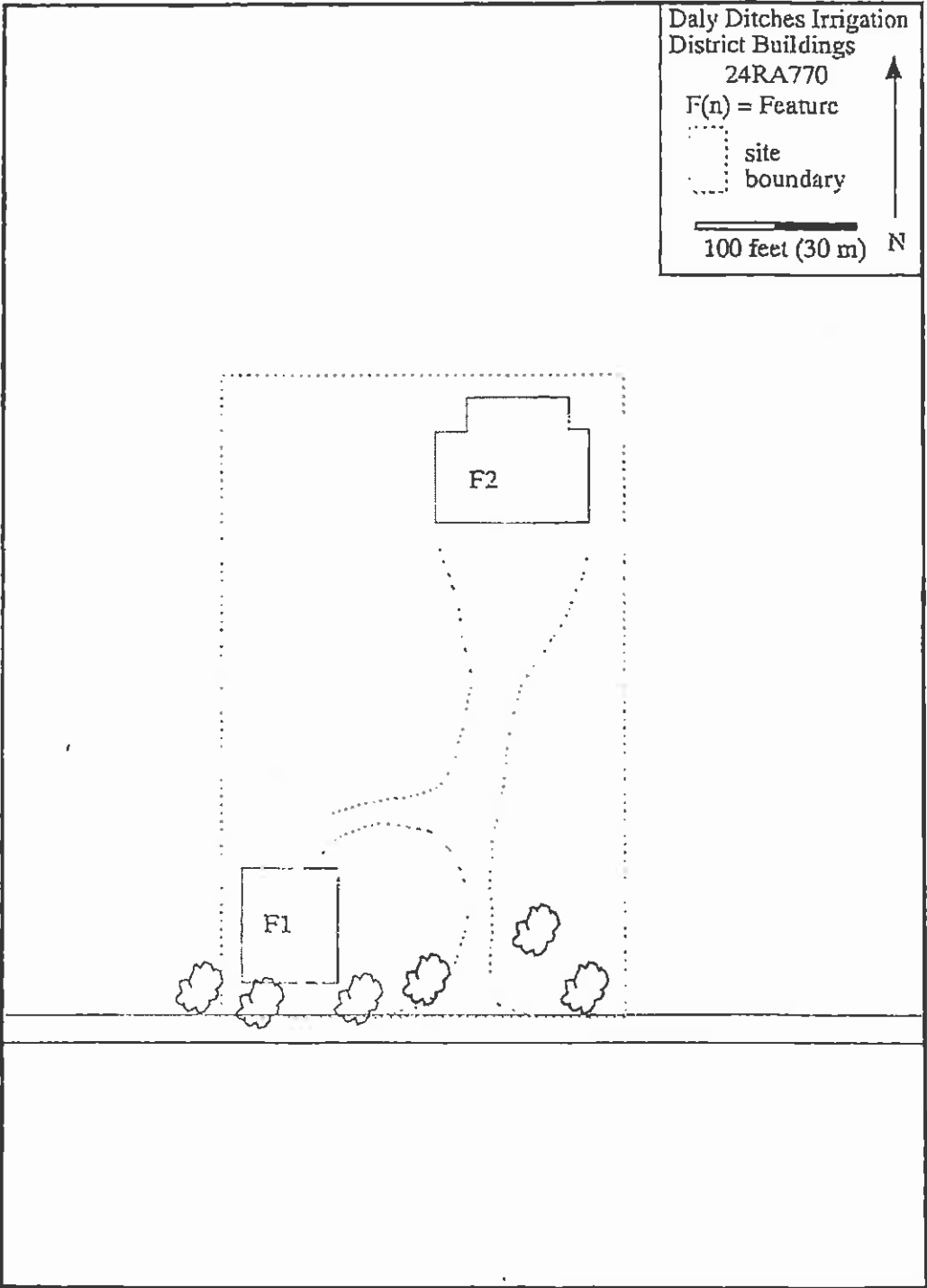


Figure 11. Sketch map of Site 24RA770

CONCLUSIONS

Any proposed federal undertaking (i.e., FAA sponsored projects) at the Ravalli County Airport that would impact the Leonardi Farm, 24RA769, may constitute an adverse effect to an NRHP-eligible property (pending the result of SHPO's determination of eligibility). If the SHPO determines this property to be eligible for the NRHP, implementation of an approved mitigation plan is recommended prior to any undertaking that would disturb the site.

If the airport's recent purchase of the Leonardi property involved FAA funds, the purchase would have constituted a federal undertaking that resulted in the acquisition of an NRHP-eligible property. The property should have been inventoried for cultural resources at that time so that Section 106 consultation could have sought for this site. It is recommended that at this time no deleterious actions be undertaken at this site until its status can be determined and appropriate mitigation or management plan be implemented.

No other significant cultural resources were identified in the APE. The Hedge Ditch, 24RA764, was not evaluated in terms of the NRHP. The irrigation canal is in current use and there are no airport-related plans to impact it in any way. Site 24RA770, two extensively modified airport hangars, is not recommended as eligible for the NRHP and no further work is required with that site. The airport property contains no other historic or prehistoric cultural concerns. No further work is recommended.

REFERENCES

Ashley, Vern

- 1948 National Federal Aid Program for Development of Hamilton Airport. Ravalli County, Montana Project No. 9-24-005-701, August 23, 1948. Report on file at the Vertical File at the Bitterroot Historical Society Library, Hamilton.

Bitterroot Historical Society

- 1998 *Bitterroot Trails III*. Published by the Bitterroot Historical Society, Hamilton. (pp 287-290).

Bitterroot Historical Society Library

- n.d. Vertical Files at the Bitterroot Historical Society Library, Hamilton.

Ferguson, David

- 2003 "Irrigation Feature Form 24R764 Hedge Ditch," prepared as part of *A Class III Cultural Resource Inventory of the Proposed FWP Fisheries Enhancement Project on Skalkaho Creek, Ravalli County, Montana*. Report prepared for Montana Department of Fish, Wildlife and Parks by GCM Services, Inc., Butte. On file at the Archaeological Records Office at the University of Montana, Missoula.

Murdo, Damon

- 2004 Cultural Resource Information Systems (CRIS) and Cultural Resource Annotated Bibliography System (CRABS) Report, SHPO no. 2004050407 conducted May 4, 2004.

Payne, Gene F.

- 1973 Vegetative Rangeland Types in Montana. Montana Agricultural Experiment Station. Montana State University, Bozeman.

State Engineer's Office

- 1958 Water Resources Survey: Ravalli County, Montana. Part I History of Land and Water Use on Irrigated Areas. Published

Leonardi, Robert

- 2004 Personal Communication with David Ferguson May 17, 2004

Western News

- 1945 "Lions [Club] Hear about Local Airport." February 8, 1945.
 1956a "Local Farms of the Bitterroot, Photo Contest." January 10, 1956.
 1956b "Local Farms of the Bitterroot, Photo Contest: August Leonardi Ranch." May 10, 1956.
 1974 "Heart Attack While Fishing Took Life From August Leonardi," September 4, 1974.

Ravalli County Courthouse

- County Assessors' Office (Montana Department of Revenue) Assessors Code 718800.

Appendix C

National Park Service Preservation Brief 43 Historic Structure Report

43 Preservation Briefs

Technical Preservation Services

National Park Service
U.S. Department of the Interior



Preservation Brief 43

The Preparation and Use of Historic Structure Reports

Deborah Slaton

- » [Introduction](#)
- » [Guiding the Treatment of Significant Historic Properties](#)
- » [When to Prepare the Report](#)
- » [Commissioning the Report](#)
- » [How Much Will It Cost?](#)
- » [Report Preparation](#)
- » [Report Organization](#)
- » [Report Production and Availability](#)
- » [Summary](#)



A NOTE TO OUR USERS: The web versions of the **Preservation Briefs** differ somewhat from the printed versions. Some illustrations are new, captions are simplified, illustrations are typically in color rather than black and white, and some complex charts have been omitted.

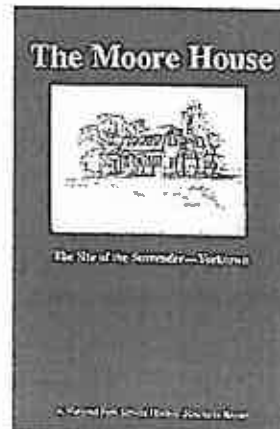
Introduction

A historic structure report provides documentary, graphic, and physical information about a property's history and existing condition. Broadly recognized as an effective part of preservation planning, a historic structure report also addresses management or owner goals for the use or re-use of the property. It provides a thoughtfully considered argument for selecting the most appropriate approach to treatment, prior to the commencement of work, and outlines a scope of recommended work. The report serves as an important guide for all changes made to a historic property during a project—repair, rehabilitation, or restoration—and can also provide information for maintenance procedures. Finally, it records the findings of research and investigation, as well as the processes of physical work, for future researchers.

A historical "first." The first historic structure report prepared in the United States, *The Moore House: The Site of the Surrender-Yorktown*, was written by Charles E. Peterson of the National Park Service in the early 1930s. In the decades since the Moore House report was completed, preservation specialists commissioned by owners and managers of historic properties have prepared thousands of reports of this type. Similar studies have also been used for many years as planning tools in France, Canada, Australia, and other countries, as well as in the United States. Although historic structure reports may differ in format, depending upon the client, the producer of the report, the significance of the structure, treatment requirements, and budgetary and time restrictions, the essential historic preservation goal is the same.

"Just as an art conservator would not intervene in the life of an artistic artifact before obtaining a thorough knowledge of its history, significance, and composition, so those engaged in the preservation of buildings...should proceed only from a basis of knowledge. Too often in the past, the cultural integrity of countless buildings...has been compromised by approaches to restorations grounded on personal whim, willful romanticism, and expedient notions of repair...The preparation of a historic structure report is the first step in adopting a disciplined approach to the care of a historic building." (From the introduction to *The University of Virginia, Pavilion I, Historic Structure Report*, Mesick Cohen Waite Hall Architects, 1988.)

In response to the many inquiries received on the subject, this Preservation Brief will explain the purpose of historic structure reports, describe their value to the preservation of significant historic properties, outline how reports are commissioned and prepared, and recommend an organizational format. The National Park Service acknowledges the variations that exist in historic structure reports and in how these reports address the specific needs of the properties for which they have been commissioned. Thus, this Brief is written primarily for owners and administrators of historic properties, as well as architects, architectural historians, and other practitioners in the field, who have limited experience with historic structure reports. It also responds to the requests of practitioners and owners to help define the scope of a historic structure report study.



In the introduction to the first historic structure report in this country, Charles E. Peterson of the National Park Service wrote in 1935, "any architect who undertakes the responsibility of working over a fine old building should feel obligated to prepare a detailed report of his findings for the information of those who will come to study it in future years." Since then, thousands of historic structure reports (HSRs) have been prepared to help guide work on historic properties. Photo: National Parks and Conservation Association.

Guiding the Treatment of Significant Historic Properties



Historic structure reports are prepared for many different types of structures with various intended uses. Examples include courthouses and state capitols still serving their historic function, such as the Wisconsin State Capitol (above); significant properties that are to be rehabilitated and adaptively reused; and properties that are to be preserved or restored as house museums. Photo: Wiss Janney Elstner Associates, Inc.

A historic structure report is generally commissioned by a property owner for an individual building and its site that has been designated as historically or architecturally significant, particularly buildings open to the public, such as state capitols, city halls, courthouses, libraries, hotels, theaters, churches, and house museums. It is certainly possible, but is less common, to prepare a historic structure report for a privately owned residence.

Besides the building itself, a historic structure report may address immediate site or landscape features, as well as items that are attached to the building, such as murals, bas reliefs, decorative metalwork, wood paneling, and attached floor coverings. Non-

attached items, including furniture or artwork, may be discussed in the historic structure report, but usually receive in-depth coverage in a separate report or inventory. One significant property may include multiple buildings, for example, a house, barn, and outbuildings; thus, a single historic structure report may be prepared for several related buildings and their site.



The scope of such studies includes the interior as well as exterior of the historic structure. This is the interior of the Stanley Field Hall, Field Museum, Chicago. Photo: McGuire Iglesias & Associates, Inc.



The University of Vermont has more than thirty contributing buildings in four historic districts listed in the National Register of Historic Places. The Campus Master Plan recognizes a commitment to respect and maintain the historic integrity of these facilities. Historic structure reports are available for many of the University's historic structures. Photo: University of Vermont Historic Preservation Program.

Historic structure reports can be prepared for other historic resource types as well, including bridges, canals, ships, mines, and locomotives, which are categorized as structures by the National Register of Historic Places; sculpture and monuments, which are categorized as objects; and college campuses and industrial complexes, which are categorized as districts. For battlefields, gardens, designed landscapes, and cemeteries, which are categorized as sites, parallel evaluation and investigation is usually undertaken through a separate document called a cultural landscape report.

A team approach. With such an array of subject matter, it is not surprising that preparation of a historic structure report is almost always a multidisciplinary task. For a small or simple project, the project team may include only one or two specialists. For a

complex project, a team may involve historians, architectural historians, archeologists, architects, structural engineers, mechanical engineers, electrical engineers, landscape architects, conservators, curators, materials scientists, building code consultants, photographers, and other specialists.

The disciplines involved in a specific historic structure report reflect the key areas or issues to be addressed for the particular property. The project leader or designated principal author for the report is responsible for coordinating and integrating the information generated by the various disciplines. Designation of a principal author may depend on the goals of the historic structure report and on which disciplines are emphasized in the study.



For small or simple projects, the project team may include only one or two specialists while complex projects may involve a large number of investigators and specialists. Evaluation of this barn may primarily involve an historian, an architectural conservator, and a structural engineer. Photo: Wiss Janney Elstner Associates, Inc.

Value of the Historic Structure Report

The completed historic structure report is of value in many ways. It provides:

- A primary planning document for decision-making about preservation, rehabilitation, restoration, or reconstruction treatments
- Documentation to help establish significant dates or periods of construction
- A guide for budget and schedule planning for work on the historic structure
- A basis for design of recommended work
- A compilation of key information on the history, significance, and existing condition of the historic structure
- A summary of information known and conditions observed at the time of the survey
- A readily accessible reference document for owners, managers, staff, committees, and professionals working on or using the historic structure
- A tool for use in interpretation of the structure based on historical and physical evidence
- A bibliography of archival documentation relevant to the structure
- A resource for further research and investigation
- A record of completed work

Benefits for large-scale and long-term projects. In the development of any historic structure report, the scope of work and level of detail are necessarily adjusted to meet the requirements of a particular project, taking into account the property's significance, condition, intended use, and available funding. This does not mean that every significant historic property requires-or receives-a comprehensive investigation and detailed report. Some historic structure reports are of very limited scope. It may be necessary for a project to proceed without a historic structure report, either because of the cost of the report or a perceived need to expedite the work.

Most large-scale or long-term work projects would benefit greatly from the preparation of such a report-and not only from the value of the report as an efficient planning tool (See

box above). If work proceeds without a historic structure report to guide it, it is possible that physical evidence important to understanding the history and construction of the structure may be destroyed or that inappropriate changes may be made. The preparation of a report prior to initiation of work preserves such information for future researchers. Even more importantly, prior preparation of a report helps ensure that the history, significance, and condition of the property are thoroughly understood and taken into consideration in the selection of a treatment approach and development of work recommendations. One of the goals of a historic structure report is to reduce the loss of historic fabric or significance and to ensure the preservation of the historic character of the resource.

When to Prepare the Report

Optimal first phase. The historic structure report is an optimal first phase of historic preservation efforts for a significant building or structure, preceding design and implementation of preservation, rehabilitation, restoration, or reconstruction work. Information contained in the report documents existing conditions and serves as a basis for proposing physical changes. As additional information is learned relevant to the history of the building, and as work on the historic structure is implemented, the report can be amended and supplemented.

Scope of Work

The following questions should be answered to determine the scope of work required for the study:

- Is the building's history well understood?
- Has the period of significance been established?
- Does the building represent a variety of periods of construction, additions, and modifications, not all of which may be significant?
- What archival documentation is available?
- Does the building have physical problems that require repair? What construction materials and systems are known to exhibit distress or deterioration?
- Does the building have code or functional problems that interfere with its use?
- Is the building in use? Is a new or more intensive use planned?
- Is funding available to commission the report needed to address these requirements? If not, can the scope of the report be reduced to answer critical questions in a limited report?
- Has the time frame for the overall project been established?

The length of time required to prepare a historic structure report and the budget established for its development will vary, depending on the complexity of the project, the extent and availability of archival documentation, and to what extent work has already been performed on the building. If the scope of a historic structure report for a simple building is limited to a brief overview of historic significance, a walk-through condition assessment, and general treatment, the study and report may be completed within a few months' time by an experienced investigator. On the other hand, a historic structure

require extensive research and on-site study by a multidisciplinary team. This type of report can often take up to two years to complete.



At the Hudson Opera House, a multi-arts center in Hudson, New York, the historic structure report was prepared incrementally. The first phase of the report focused on assessment and recommendations for repair of the roofing, the most critical issue in preservation of the building. Photo: Gary Schiro.

Incremental preparation. If budgetary constraints preclude completing the historic structure report as one project, it can be prepared incrementally. The work recommendations should not be developed or implemented prior to completion of research and investigation, except for emergency stabilization to prevent immediate failure or damage, or temporary measures to address critical health and safety issues. A partial historic structure report can be completed in preparation for anticipated work that must be initiated to preserve or protect the building. This type of report includes analysis of only those building elements and systems that may be affected by the proposed work, and involves only the specialists needed to address the types of investigation and work planned. For example, research and documentation of existing interior finishes may be required before undertaking localized structural stabilization that will require removal of interior materials.

In undertaking such work prior to the completion of a historic structure report, caution should be taken not to alter or unnecessarily remove changes to the building that had occurred over time. The completed report may conclude that such changes to the building may have acquired significance in their own right and therefore merit preservation.

Documenting past work. Sometimes a historic structure report is initiated when repair or restoration work on the historic building has already been completed. Although it is always recommended that the study be done prior to new work, in this case, the report needs to document--as fully as possible--the condition and appearance of materials, elements, and spaces as they existed prior to the work performed. The extent to which this can be achieved depends on the quality of archival documentation available and physical recording undertaken prior to the completed work. The report should describe the nature and extent of the past repair or restoration work, and, if possible, should also document research performed, reasons for design decisions made, and the construction process for the work already completed on the structures.

Commissioning the Report

Commissioning a historic structure report requires answering a series of questions to establish the scope of work. The goals of the report need to be defined and the report should be designed to support planning for the future of the historic structure. This effort may involve gathering information to answer questions about what is significant about the building and site; what uses are appropriate for the building, or whether existing uses need to be modified; what known conditions require repair and whether those repairs are urgent; and what short-term and long-term goals need to be addressed. Finally the available budget for the historic structure report project should be established before a

request for proposals is issued.

The procedures for preparing a historic structure report and the outline of report content and organization can serve as the basis to develop a scope of work for the study and also to solicit proposals for a report that reflects the requirements of the specific structure, and, of course, the available budget. Although the request for proposals should always establish such a scope of work, firms may be invited to suggest adjustments to the scope of work based on their past experience. The request for proposals should include a qualifications submittal from each proposer. This submittal should include resumes for the principal investigators and a description of experience in preparing historic structure reports or similar studies, as well as experience with buildings of similar type, age, and construction to the subject of the study. References and sample of work may be requested from the proposer as part of this submittal. An interview with one or more candidates is highly recommended, both so that the proposers can present their project approach and qualifications, and so that the client can ask questions in response to the submitted proposal.

How Much Will It Cost?

The cost of undertaking a historic structure report is determined by numerous factors, some of which may be unique to a particular property. Common to most projects, however, are seven factors that help determine the cost of a report:

1. The level of significance of the property will certainly influence the cost. That is, a property that is nationally significant would likely require a greater effort than a property that is only locally significant.

Historical photographs are an invaluable aid and time saver in establishing a building's original construction and evolution; in guiding the replication of missing features; and even in understanding existing material deterioration. The availability of information, such as archival photographs, surviving original architectural drawings, or HABS documentation, has a direct bearing on the cost of preparing a historic structure report. In this circa 1890 photo of the Rancho San Andrés Castro Adobe, the "lumbering up" on the south end is a character-defining feature of adobe construction that is

2. The treatment and use for which the historic structure report information provides a basis is an important cost consideration. If the decision is reached to maintain a building in its current form, the level of effort required in preparing a historic structure report would be less than where the intended treatment is a comprehensive restoration. A change in building use likewise may increase the level of effort; for example, the additional work involved in addressing different building code provisions.

photograph from the Historic Structure Report for Rancho San Andrés Adobe by Edna Kimbro, State Historian, California State Parks, Monterey District.

3. The availability of information about the historic resource has a direct bearing on costs. Some historic structures are well researched, and drawings may have been prepared to exacting standards, while others may require considerable original research and investigation to establish the evolution of the structure. On occasion, a property owner's in-house staff or volunteers may undertake research in advance of a contracted study as a way to reduce the cost of the report.

4. The location of and access to a historic building is a cost factor for some studies. A property in a remote mountain location can involve high travel costs relative to properties in or near an urban area. A structure requiring special techniques for exterior physical inspection would involve higher access costs than a small residential structure.

Collecting Information for the Report

A typical study involves:

- Preliminary walk through
- Research and review of archival documentation
- Oral histories
- An existing condition survey (including exterior and interior architectural elements, structural systems, mechanical and electrical systems, etc.)
- Measured drawings following the *Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation*
- Record photography
- Evaluation of significance
- Discussion with the owner and users about current and future intended uses for the structure
- Selection and rationale for the most appropriate approach to treatment (preservation, rehabilitation, restoration, or reconstruction)
- Development of specific work recommendations

5. The size and architectural character of a property affects the time required to prepare a historic structure report. A simple four-room vernacular structure would usually involve less effort than a complicated high-style courthouse with many significant spaces.



Numerous factors influence the cost of preparing a historic structure report including the level of significance, size, and complexity of the property; required treatment and use; existing condition; and the location and access to the structure. Historic structure reports were prepared for several small lighthouses along the Oregon coast, including the Coquille River Lighthouse, shown here. Photo: Wiss, Janney Elstner Associates, Inc.

6. The physical condition of the structure and also the extent of physical fabric that is accessible for study will be cost determinants as well. Obviously, a property in good condition is usually less problematic than one in a deteriorated state. For a structure that was continuously occupied and where alterations cover earlier fabric, the opportunity to extract information from physical fabric dating to early periods may be limited without extensive removals that are usually beyond the scope of the historic structure report study. Even where buildings are vacant, there are instances where certain physical investigations may need to be limited because of the destructive impact that will occur to historic fabric.

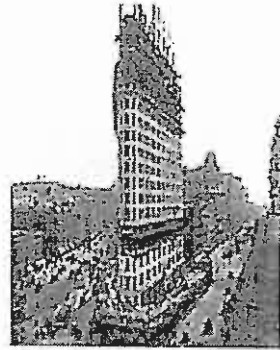
7. The type of final report that is required can significantly affect the cost of the project, but is an area where costs can readily be controlled. Historic structure reports do not necessarily need to be professionally bound and printed. In-house desktop publishing has become commonplace, and a formal work product can often be obtained without excessive costs. Overly sophisticated printing and binding efforts represent a misplaced funding allocation for most historic properties. There are distinct advantages to having a report

prepared in an appropriate electronic form, thus reducing the number of hard copies and facilitating future updates and additions to the report. For most properties where historic structure reports are prepared, ten or so hard copies should suffice. Providing one copy of the report in a three-ring binder is a helpful and inexpensive way to furnish the owner with a "working" copy of the document.

Suggested steps for collecting information prior to configuring the data into the actual report are as follows:

Preliminary walk through. A preliminary walk through of the building and its site with the owner or site manager, appropriate building staff representatives, and key members of the historic structure report team is important to review the project scope of work. During the walk through, a brief review of existing conditions can be performed to highlight user concerns and gather information about distress and deterioration observed. Building staff may also be able to provide information on recent repairs, current maintenance procedures, and specific areas of active deterioration. A brief review of existing documentation available on site is also useful. Site personnel may be able to recommend additional archival resources.

Historical research. Archival research should be directed toward gathering information on the building's history, original construction and later modifications, occupancies, and uses over time. Research for the report is not intended to produce a large compendium of historical and genealogical material, but rather selected information necessary to understand the evolution of the structure, its significance, and justification for the treatment selected. For significant sites where other types of studies such as archeological investigations or a cultural landscape report have been completed or are underway, coordination is required to ensure that research information is shared and that the research effort is not duplicated.



If a National Register nomination or other inventory has already been completed for the building and its site, the bibliography of that document may suggest possible sources for further research. In addition, a completed National Register nomination can serve as a starting point for development of the historic structure report sections on history and significance, and can be included in the appendix of the report.

Public and university libraries, and state and local historical societies are likely sources of relevant materials. Municipal records collections often contain deed and building permit information that is useful in developing a chronology of ownership and construction. Architectural, engineering, and construction documents, shop drawings, repair documents, and maintenance records are valuable sources of information. The original drawings and specifications, if extant, may be kept at the archives of the historic building but may also have been retained by the firm that designed the building or successor firms. Building records and other archival documentation may have remained with the structure or site, with previous owners, or with related properties.

Historical research is directed toward gathering information on a structure's history, original construction and later modifications, occupancies, and uses over time. Research may range from national repositories such as the Library of Congress to local collections or private family records. Old newspapers, architectural journals and even manufacturing trade catalogs can be surprising sources of historical accounts and illustrations. This circa 1902 photograph of New York's Flatiron Building is of the construction in progress; such photographs are useful in understanding building chronology as well as concealed conditions of as-built construction such as building framing. Photo: Library of Congress, LC-D401-14278.

Historic photographs are invaluable in developing a chronology of building changes and in determining the character and detailing of missing elements. Photographs in private collections, not intended as formal documentation, can often be useful. For example, family photographs taken outdoors can document a building that appears in the background. Renderings and paintings can also be useful, but these images must be carefully analyzed and compared with other information to ensure accurate interpretation. Correspondence and oral histories can be important additions to the overall information, but may be unreliable and should be confirmed, when possible, by comparison with photographic documentation and physical evidence.

Fire insurance maps, such as Sanborn maps, can provide information on type of construction materials. When maps from different years are available, these can be useful in developing a chronology of additions and other changes to the structure.

Existing condition survey. A survey is performed to document physical spaces and elements, and to assess the current condition of building materials and systems. In conjunction with historical research, the condition survey helps determine the historic integrity of a structure. The survey and inspection should address the building's exterior and interior materials, features and finishes; structural systems; interior spaces; mechanical, electrical, and plumbing systems; and fire detection and security systems. Further study may be required such as non-intrusive or intrusive investigation, field testing, sample removal, and laboratory testing and analysis of materials.

Archeological Investigations can provide information on the locations of building foundations and other sub-grade building elements, and can assist in developing information on the function of adjacent site areas, building elements, and previously unfinished floor spaces. The survey may also address the immediate site landscape, if this is not covered in a separate cultural landscape report.

Information gathered during the survey can be documented with field notes on baseline drawings consisting of field sketches or measured drawings. In addition, documentation can include photographs (35-mm, large format, digital, perspective-corrected, and scale-rectified photographs; photogrammetry; and laser techniques), sketches and measured drawings, computer-aided design and drafting (CADD), video records, and written notes and field measurements. Depending upon project requirements, documentation may need to be prepared to archival standards regarding paper, photographs and negatives, electronic records, and backup data.

Measured drawings and record photography. The collection of the Historic American Building Survey/Historic American Engineering Record (HABS/HAER) archive at the Library of Congress should be searched in case the property has been previously documented through drawings and photographs. While many historic properties have been documented since the start of this invaluable collection in the 1930s, it is still more likely that this type of documentation does not exist for a property for which a historic structure report is being undertaken. Preparation of such documentation to portray the current condition of a property can be an invaluable addition to the historic structure report. Besides serving as a documentary record of a structure, the recording documents can serve another purpose such as an easement document, information for catastrophic loss protection, interpretive drawings, or baseline drawings for proposed work. If undertaken as part of the current building study, the measured drawings and record photography should follow the *Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation*.



Archeological studies may be valuable in uncovering important evidence of changes to a historic structure. Following historical research and after several archeological soil probes, a decision was made to excavate an area in front of a mid-nineteenth century fireplace, revealing the original dirt floor and hearth undetected by earlier restoration efforts. Photo: NPS files.



The use of special access methods may be necessary for close-up investigation of building elements. At the Wisconsin State Capitol, project architects and engineers used rappelling techniques. Photo: Wiss, Janney, Elstner Associates, Inc.

Materials Investigation and Testing. Field examination and testing of building material may include non-destructive (non-intrusive) or, where necessary, destructive (intrusive) examination and/or testing of materials, components, and systems. Examples of non-destructive methods of field examination and testing include field microscopy, the use of a metal detector to locate concealed metal elements, and X-ray techniques to assess concealed conditions. Some examples of destructive methods of field examination and testing include structural testing, strain relief

testing, and inspection openings (probes).

Instruments such as a borescope, through which concealed conditions can be viewed through a small hole, permit enhanced examination while limiting damage to the existing building fabric.

Depending upon existing conditions and the results of the site inspection, field monitoring may be required. Field monitoring can include humidity and temperature monitoring, documentation of structural movement and vibrations, light level monitoring, and other environmental monitoring.

In addition, materials samples may be removed for laboratory studies. A wide range of laboratory testing may be appropriate to establish the composition of various construction materials, determine causes of deterioration, and identify and assess appropriate conservation and repair measures. Materials analysis may also be helpful in dating changes to the structure and in developing a chronology of construction. For example, mortar analysis may be performed to determine the composition of original and repointing mortars and to provide information for use in designing a mortar mix for repointing. As another example, paint and other coatings may be analyzed to determine finish types and composition, and original and subsequent color schemes, using special analysis techniques and comparison with color standard systems. Samples should generally be returned to the owner and retained in case future testing is required. In some cases, it may be appropriate to reinstall the samples after materials studies have been completed.

Sample removal and analysis may also be required to identify hazardous materials, which are present in many historic buildings. For example, lead and other heavy metals are components of many older paints and coatings, and asbestos is a constituent of some roofing materials, claddings, sealants, and insulation. Mold and mildew may be present and require special treatment; in this case a consulting industrial hygienist may need to be included in the project team. Analysis may be performed to confirm the materials present, determine the nature of the hazard, and help identify methods of remediation or management.



Paint studies may not only help establish the chronology of paints and paint colors used on a building but also may aid in the dating of existing architectural features. Examination of the paint layers on these modillions utilizing a hand-held microscope enabled an investigating team to confirm in the field which modillions were original and which were later replacements. Photo: NPS files.

As buildings constructed during recent decades become "historic," newer materials require study and analysis as part of historic structure reports. For example, curtain wall components and joint sealants may require analysis to determine their composition, identify causes of deterioration, and select appropriate replacement sealants. Composite materials and plastics, present in post-World War II buildings, may also require special effort to determine repair techniques or appropriate materials for replacement.

All of the information gathered during the physical investigation, and through field testing and laboratory analysis, should be documented in field notes, sketches, photographs, and test reports. This information is incorporated in the historic structure report and provides a basis for the development of treatment recommendations.

Evaluation of significance. The process of evaluation occurs throughout the study of the historic structure as information is gathered, compared, and reviewed. Historical data and physical evidence are reviewed to help evaluate the historical, architectural, engineering, and cultural significance of the property, its construction and use, and occupants or other persons associated with its history and development. This evaluation includes determination of the period(s) of primary significance. An overview of the building's history and an assessment of its significance are included in the report.

The Secretary of the Interior provides four distinct but interrelated approaches to the treatment of historic properties:

- **Preservation** focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time.
- **Rehabilitation** acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.
- **Restoration** is undertaken to depict a property at a particular period of time in its history, while removing evidence of other periods.
- **Reconstruction** re-creates vanished or non-surviving portions of a property for interpretive purposes.

Depending on the historical significance of the property, and whether a detailed history has already been written, a brief or more detailed history may be appropriate. A chronology of construction and changes to the building, developed through historic and physical research, is an effective approach to identifying original building elements, as well as modifications that have occurred over time. If a comprehensive National Register nomination or other inventory has been prepared, the significance may already be defined. In other cases, the significance of a building and even its treatment may have been established through authorizing legislation or through the charter of an organization or foundation that owns the historic property. Where appropriate, however, the building's significance should be re-evaluated in light of research performed for the historic structure report.

The results of the research, investigation, and field and laboratory testing are reviewed as a basis for developing specific work recommendations. The history and significance of the building and its site are evaluated to understand what spaces, elements, and finishes are of architectural or historical importance, and to confirm the overall project goals and treatment direction. The physical condition of the building and its systems is evaluated

with regard to existing deterioration and distress, and needed repairs, as well as changes required to meet treatment goals. Attention is given to identification of life safety issues and code considerations. Conditions are also identified that could lead to future safety risks, loss of historic fabric, or loss of performance.

Selection of a treatment approach. Once the building's history, significance, and physical condition have been researched and investigated, an appropriate treatment is usually selected. Depending upon the intended use of a property, funding prospects, and the findings of the investigation, it may be necessary in some cases to identify and discuss an alternate treatment as well. For example, a building currently occupied by caretakers that is a candidate for restoration and use as a museum may require such ambitious funding support that, for the foreseeable future, a more practical treatment could be to preserve the building and retain the caretakers. In this case, the treatment recommendation would be to restore the property and project work relevant to the restoration would be described. However, the alternate treatment (in this instance an interim one) of preserving the building in its current form would also be described, including discussion of work appropriate to preservation such as repairing the existing roof and installing a monitored fire detection system.



The treatment approach selected for a building usually is determined by the intended use of a property, funding prospects, and the findings of an investigation. The Wolf Creek Inn, operated by the Oregon Parks and Recreation Department, is among the most intact and oldest active traveler's inns in Oregon. The historic structure report outlined a rehabilitation treatment which included such work recommendations as repairs to specific historic fabric, landscape restoration and site improvements, and upgrading of the building's mechanical and electrical systems. Photo: Historic American Building Survey, 1934.

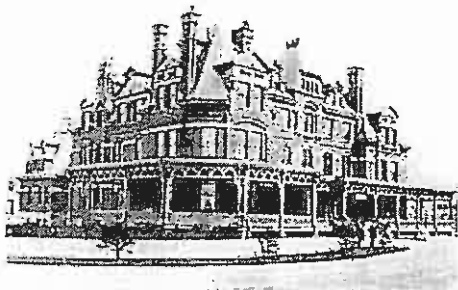
In selecting an appropriate treatment, *The Secretary of the Interior's Standards for the Treatment of Historic Properties* can be particularly helpful. In use for more than twenty-five years, the Standards are a widely accepted means of planning for and undertaking project work in a manner that preserves historic materials and elements. The Secretary's Standards have been adopted by many state and local review entities for review of work proposals on historic structures.

The Standards and their accompanying Guidelines describe four different options for treatment and list recommended techniques for exterior and interior work consistent with each option. One treatment (preservation, rehabilitation, restoration, or reconstruction) is usually selected and followed throughout the course of a project involving a particular building. Application of a single treatment approach helps to avoid inappropriate combinations of work, such as restoring a building's appearance to an earlier time in history while simultaneously constructing a new addition.

Development of work recommendations. The work recommendations are a central feature of the report. They are developed only after the research and investigation has been completed and the overall project goal established as to whether a particular building should be preserved, rehabilitated, restored, or reconstructed. The specific work recommendations need to be consistent with the selected treatment. If analysis performed during the study suggests that the approach or use initially proposed would adversely affect the materials, character, and significance of the historic building, then an

alternate approach with a different scope of work or different use may need to be developed. The process of developing work recommendations also needs to take into account applicable laws, regulations, codes, and functional requirements with specific attention to life safety, fire protection, energy conservation, abatement of hazardous materials, and accessibility for persons with disabilities.

In addition to project goals, the proposed work is also guided by the building's condition. The scope of recommended work may range from minor repairs to structural stabilization to extensive restoration. In addition, the scope of work may be very narrow (e.g., priming and painting of woodwork and repair of deteriorated roof flashings), or very extensive (e.g., stabilization of timber framing or major repair and repointing of exterior masonry walls). The result of implementing (or not implementing) the recommended work needs to be considered as the recommendations are developed.



The historic structure report for the Hotel Florence, shown here in 1886, provided a basis for stabilization and repair work which has been completed. Initial phases of work addressed preservation of the building envelope, structural repairs, and limited mechanical and electrical improvements. The report also provided recommendations for future rehabilitation work that will be implemented in phases as funding becomes available. Photo: Historic American Buildings Survey.

Of course, the available project budget is also a factor in determining the extent of recommended work and whether it must be accomplished in several phases or projects. Whether or not available budget is the primary factor in determining the extent of work that can be performed, it is often useful to prioritize recommended work items. The recommended tasks can be examined in terms of relative importance and the time required for implementation. Prioritizing repairs can be critical where immediate or short-term work is needed to stabilize a building or structure, eliminate safety hazards, make the building weather tight, and protect it against further deterioration.

Appropriate procedures for undertaking the recommended work items are described in the historic structure report and are intended to serve as a basis for planning the repair, rehabilitation, or restoration design. The level of

detail to which the work items are defined should be limited in the historic structure report, as these recommendations serve as the foundation for, rather than in place of, design and construction documents for the work. For example, baseline drawings annotated with existing condition notes can later serve as a starting place for development of construction drawings. Outline procedures provided in the report for recommended work items can be used later to develop specifications for the work. Finally, a general opinion of probable costs associated with the recommended work is often prepared. A cost estimate is useful to building owners and managers in budget planning and also assists in prioritizing the work. For large or complex projects, the services of a professional cost estimator may be helpful in this effort.

Report Preparation

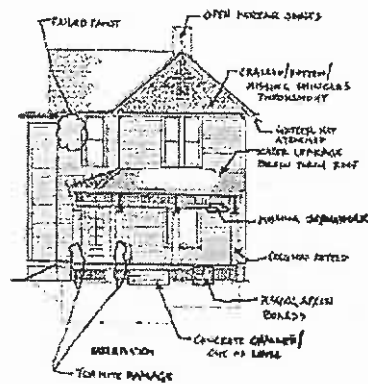


The historic structure report for the Noland House in Independence, Missouri, a vernacular house that is significant as part of the context of Harry S. Truman's life and family in Independence, Missouri, includes photographs and measured drawings to record existing features and conditions of the building. The measured drawings will also provide a basis for construction documents for future preservation work. This photograph illustrates the front elevation of the house. Photo: Bahr, Vermeer & Haecker, Architects Ltd.

Upon completion of the research, physical investigation, evaluation, and work recommendations, the historic structure report is compiled. The principal investigator may submit an outline of the report for owner review at the beginning of the report preparation. A draft report may also be submitted for review when the report is partially complete, especially if there are many new research findings, significant physical distress conditions to be addressed, or complicated choices to be made in determining the treatment.

The report should be prepared in a style and format that is readily accessible and user-friendly; however, it is not essential that a standardized method or format be followed for all historic structure reports. The report can be primarily narrative or graphic, but is most typically a combination of these formats. Ease and economy of report

preparation should be considered but should not take precedence over clarity and thoroughness of documentation.



This is one of the measured drawings for the Noland House (see above, left). Drawing: Bahr, Vermeer & Haecker, Architects Ltd.

Meetings and presentations. In addition to meetings with site personnel early in the study process, it is helpful for the project team to meet at key points during the research, investigation, and development of the historic structure report. For example, it is useful for the project team members performing archival research to meet with site personnel to review documents and findings, and to help ensure that important archival sources have not been overlooked. Project team members may also walk through the building with site personnel during the investigation phase to review and discuss existing conditions and possible recommendation approaches. When the report is in draft form, a meeting of the project team with those personnel who will be reviewing and using the report is useful to discuss overall goals, treatments, and recommendations as these are being developed. Finally, when the study is complete, a presentation of the completed study by the project team helps to familiarize the owner and building personnel with the report, highlight key issues, answer questions, and provide a transition to the use of the report as a working document by the building's caretakers.

Report Organization

The scope of the study-historical research, condition survey, investigation and testing, evaluation, selection of appropriate treatment, and development of specific work recommendations-generates a wealth of information about the history and condition of

the building and the specific work needed to, preserve, rehabilitate, restore, or reconstruct it. This information is typically a combination of historical and technical data obtained by different members of the project team and presented as an integrated report in text, photographs, drawings, and tables. The project leader or principal author must guide the development of the report so that key issues are addressed, information is documented and assimilated in the report findings and discussion, recommendations are clearly presented, and no information is lost or misinterpreted in the compilation process.

In order to integrate the many pieces of information into a coherent and comprehensive whole, the historic structure report is generally organized into two principal sections preceded by a brief introduction that summarizes overall findings and recommendations and provides project administrative data. The main sections of the report consist of (1) a narrative that documents the evolution of the building, its physical description, existing condition, and an evaluation of significance; and (2) a discussion of historic preservation objectives, together with recommendations for an overall treatment approach and for specific work. The report is usually supplemented with footnotes or endnotes, bibliography, and appendices of historical documentation and technical data.

It is highly recommended that a post project record of all work performed later be added as a supplement to the historic structure report. This record may consist of annotated drawings, photographs, and other documentation of the work performed. Site personnel may help coordinate this supplement or record if the principal author of the report is not involved in the later construction phase. Some organizations and government agencies consider the post project record to be a third part of a historic structure report and not just a supplement.

When physical evidence is discovered during the course of the construction work or when new documentary evidence is discovered as research continues after completion of the report, this also should be recorded and incorporated into the historic structure report or in an appendix to the report. An important goal of the historic structure report process is to maintain the report as an active and working document, both to facilitate the use of information compiled in the report and to permit the report to readily accommodate new information as it becomes available.

Report Production and Availability

The historic structure report is most often prepared in the form of a printed, illustrated manuscript. In recent years, attention has been given to creating or transforming the historic structure report into an electronic document as well. In electronic format, the report can easily be shared with interested parties and is readily updated.

However, because historic structure reports are still mostly produced in printed format (although sometimes concurrently with an electronic document), it is important that, after production, one or more copies be provided to the property owner and also made available to the project team. As the basis for design and construction documents, the historic structure report needs to be readily available and extensively used during implementation of the work.

At least one site copy should be maintained in a physical format that can be readily

updated, such as a three-ring notebook to which additional documentation can easily be added. Field documentation materials, including photographs and negatives, measured field drawings, condition reports and surveys, materials test reports, and other information gathered during the study can be stored in an archive by the building owner for future reference.

An archival copy should also be provided to the owner, and a minimum of one archival copy kept at the project site and at an appropriate local or regional archive, such as a state historical library. Copies of the historic structure report may also be provided to a local historical organization or university and the state historic preservation agency or historical society. In addition, a copy may be given to the National Trust for Historic Preservation Library at the University of Maryland at College Park, which has established a reference collection of historic structure reports.

Summary

Various agencies and organizations have employed historic structure reports as planning tools for many years, for example, the National Park Service, General Services Administration, New York State Office of Parks, Recreation and Historic Preservation, and the Society for the Preservation of New England Antiquities. These and other agencies and organizations may have specific requirements and procedures for reports prepared for properties under their stewardship that differ from those described in this Preservation Brief. All historic structure reports, however, share a common goal—the careful documentation and appropriate treatment of significant historic structures.

The historic structure report is an optimal first phase of historic preservation efforts for a significant building, preceding design and implementation of its preservation, rehabilitation, restoration, or reconstruction. If work proceeds without a historic structure report as a guide, physical evidence important to understanding the history and construction of the building may be destroyed. The preparation of a report prior to initiation of work provides documentation for future researchers. Even more importantly, prior preparation of a report helps ensure that the history, significance, and condition of the property are thoroughly understood and taken into consideration in the selection of an appropriate treatment and in the development of work recommendations. A well prepared historic structure report is an invaluable preservation guide.

Content and Organization of Report

Cover Page
Table of Contents
Introduction
 Study Summary
 Project Data

Part 1 - Developmental History

 Historical Background and Context
 Chronology of Development and Use
 Physical Description
 Evaluation of Significance

Condition Assessment

Part 2 - Treatment and Work Recommendations

Historic Preservation Objectives

Requirements for Work

Work Recommendations and Alternatives

Bibliography

Appendices

Supplemental Record of Work Performed (section often added later)

Completion Report

Technical Data (on work completed)

Introduction. This section includes a concise account of research and investigation findings and recommendations for treatment and use, and a record of project administrative data.

- *Study Summary* - a brief statement of the purpose, findings, and recommendations of the study, including major research findings, key issues addressed by the study, and a summary of recommendations for treatment and use.
- *Project Data* - a summary of project administrative data (e.g., location, ownership, and landmark status of property) and the methodology and project participants.

Part 1 Developmental History. This section consists of a narrative report based on historical research and physical examination documenting the evolution of the building, its current condition and causes of deterioration, and its significance.

- *Historical Background and Context* - a brief history of the building and its context, its designers and builders, and persons associated with its history and development.
- *Chronology of Development and Use* - a description of original construction, modifications, and uses, based on historical documentation and physical evidence.
- *Physical Description* - a description of elements, materials, and spaces of the building, including significant and non-significant features of the building.
- *Evaluation of Significance* - a discussion of significant features, original and non-original materials and elements, and identification of the period(s) of significance (if appropriate).
- *Condition Assessment* - a description of the condition of building materials, elements, and systems and causes of deterioration, and discussion of materials testing and analysis (if performed as part of this study).

Part 2 Treatment and Work Recommendations. This section presents the historic preservation objective and selected treatment (preservation, rehabilitation, restoration, or reconstruction), requirements for work, and recommended work that corresponds with the defined treatment goal.

- *Historic Preservation Objectives* - a description and rationale for the

recommended treatment and how it meets the project goals for use of the building, e.g., rehabilitation for a new use, restoration for interpretive purposes, etc.

- *Requirements for Work* - an outline of the laws, regulations, and functional requirements that are applicable to the recommended work areas (e.g., life safety, fire protection, energy, conservation, hazardous materials abatement, and handicapped accessibility).
- *Work Recommendations and Alternatives* - a presentation of tasks recommended to realize the proposed treatment approach; evaluation of proposed solutions; and description of specific recommendations for work, including alternate solutions, if appropriate.

Notes, Bibliography and Appendices

- Footnotes or endnotes
- Bibliography, annotated if possible
- List of sources of information (e.g., archives, photograph collections)
- Appendices (e.g., figures, tables, drawings, historic and current photographs, reference documents, materials analysis reports, etc.)
- Index (if the report is particularly long or complex)

Supplemental Record of Work Performed. This section documents work performed, which may include planning studies, technical studies such as laboratory studies or structural analysis, or other investigation work that was not part of the scope of the original historic structure report, and records physical work on the building (construction documents, annotated drawings, photographs). The section is usually added later to update the report, as most historic structure reports are issued prior to implementation of the recommended treatment approach and specific work. It is sometimes referred to as Part 3 of the report.

- *Completion Report* - a record of the work accomplished, physical evidence discovered during construction, and how findings affect interpretation of the building.
- *Technical Data* - a collection of field reports, material data sheets, field notes, correspondence, and construction documents.

Selected Bibliography

Burns, John, editor, with the staff of HABS/HAER, National Park Service, U.S. Department of the Interior. *Recording Historic Structures*. Washington, D.C.: The American Institute of Architects Press, 1989.

Jandl, H. Ward. Preservation Brief 18. "Rehabilitating Interiors in Historic Buildings: Identifying and Preserving Character-Defining Elements." Washington, D.C.: National Park Service, 1988.

McDonald, Jr., Travis C. Preservation Brief 35. "Understanding Old Buildings: The Process of Architectural Investigation." Washington, D.C.: National Park Service, 1994.

Nelson, Lee H., FAIA. Preservation Brief 17. "Architectural Character: Identifying the

Visual Aspects of Historic Buildings as an Aid to Preserving Their Character." Washington, D.C.: National Park Service, 1988.

The Secretary of the Interior's Standards for Rehabilitation & Illustrated Guidelines for Rehabilitating Historic Buildings. Washington, D.C.: U.S. Department of the Interior, National Park Service, Preservation Assistance Division, 1992.

Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation. Washington, D.C.: U.S. Department of the Interior, National Park Service, Historic American Buildings Survey/Historic American Engineering Record, 1983.

Slaton, Deborah, and Alan W. O'Bright, guest editors. *Association for Preservation Technology International (APT) Bulletin* XXVII, no. 1 (1997). Special Issue on historic structures reports.

Weeks, Kay D., and Anne E. Grimmer. *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings.* Washington, D.C.: U.S. Department of the Interior, National Park Service, Cultural Resource Stewardship and Partnerships, Heritage Preservation Services, 1995.

Acknowledgements

Deborah Slaton is an Architectural Conservator with Wiss, Janney, Elstner Associates, Inc., in Northbrook, Illinois.

The author gratefully acknowledges the following individuals for their assistance in the preparation and review of this brief: Alan W. O'Bright, National Park Service; John Volz, Volz & Associates; Philip D. Hamp, Vinci-Hamp Architects, Inc.; William G. Foulks; and Travis C. MacDonald, Jr., Thomas Jefferson's Poplar Forest. Additional thanks go to Jeffrey P. Koerber, Clark University, and Harry J. Hunderman, Joshua D. Freedland, and Kenneth M. Itle, Wiss, Janney, Elstner Associates, Inc. The following staff of the Technical Preservation Services, National Park Service, offered valuable comments during its development: Sharon Park, FAIA, Anne Grimmer, Michael Auer and Chad Randl. Charles E. Fisher and Kay D. Weeks of the National Park Service's Heritage Preservation Services were the technical editors for this publication project.

Front cover image: Wisconsin State Capitol. Photo: Wiss, Janney, Elstner Associates, Inc.

This publication has been prepared pursuant to the National Historic Preservation Act, as amended, which directs the Secretary of the Interior to develop and make available information concerning historic properties. Comments about this publication should be directed to: Charles Fisher, Technical Publications Program Manager, Technical Preservation Services, National Park Service (Org. 2255), 1849 C Street, NW, Washington, DC 20240. This publication is not copyrighted and can be reproduced without penalty. Normal procedures for credit to the author and the National Park Service are appreciated. Unless otherwise indicated, photographs are from NPS files. Excepting NPS photos, the photographs used in this publication may not be used to illustrate other publications without permission of the owners.

ISSN: 0885-7016 April 2005 U.S. Government Printing Office: 2004 024-005-01191-9

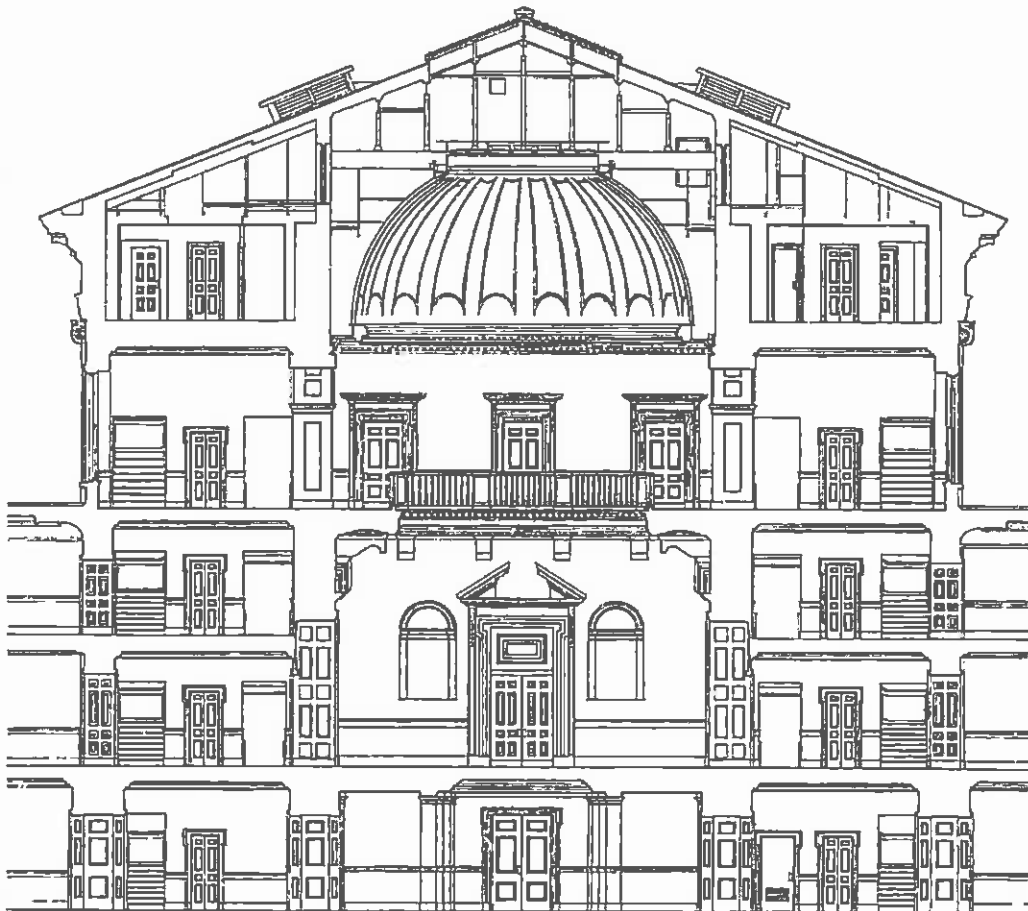
[Technical Preservation Services](#) | [Order Brief](#) | [Preservation Briefs](#) | [Search](#) |
[Questions/Answers](#)

KDW

Appendix D

National Park Service HABS/HAER Standards

HABS/HAER STANDARDS



Historic American Buildings Survey/
Historic American Engineering Record
Cultural Resources Program
U.S. Department of the Interior
National Park Service
Washington, D.C. 20013-7127



On the cover: Virginia State Capitol section drawing, drawn by Gerhard Pfundner, 1989.
Back Cover: Troy Gas Light Co. Gasholder House, in Troy, New York, drawn by Eric DeLony.

Acknowledgements: These standards were compiled and reissued in 1990, by Caroline H. Russell and the staff of the HABS/HAER Division. Thanks to Ronald M. Greenberg who reviewed the manuscript and to all the staff involved in the production.

SECRETARY OF THE INTERIOR'S
STANDARDS AND GUIDELINES
FOR
ARCHITECTURAL AND ENGINEERING
DOCUMENTATION:
HABS/HAER STANDARDS

Originally published in the **Federal Register**, Vol. 48, No. 190,
(Thursday, September 29, 1983), pp. 44730-34.

Historic American Buildings Survey/
Historic American Engineering Record
Cultural Resources Program
National Park Service
U.S. Department of the Interior
Washington, D.C. 20013-7127

1990

Secretary of the Interior	Manuel Lujan, Jr.
Asst. Secretary, Fish & Wildlife & Parks	Constance Harriman
Director of the National Park Service	James M. Ridenour
Deputy Director	Herbert S. Cables, Jr.
Assoc. Director for Cultural Resources	Jerry L. Rogers
Deputy Assoc. Director for Cultural Resources	Rowland T. Bowers
Chief, HABS/HAER Division	Robert J. Kapsch
Acting Deputy Chief, HABS/HAER Division	John A. Burns
Chief, HAER	Eric N. DeLony
Principal Architect, HABS	Paul D. Dolinsky
Senior Historian, HABS	Allison K. Hoagland

The Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) a division of the National Park Service is responsible for documenting the historic buildings, sites, structures, and objects of this country by producing measured drawings, large format photographs, and written histories. The Library of Congress, Prints and Photographs Division is the repository for these documents. The American Institute of Architects, the American Society of Civil Engineers, and the other founding engineering societies provide technical guidance. The regional offices of the National Park Service in Philadelphia, Atlanta, Denver, San Francisco, and Anchorage administer the mitigation documentation program.

Preface

This booklet contains the Secretary of the Interior's Standards for Architectural and Engineering Documentation as published in the *Federal Register* on September 29, 1983 - commonly known as the HABS/HAER Standards for the Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) program of the National Park Service.

These performance standards are intended to define the products acceptable for inclusion in the HABS/HAER collections within the Library of Congress.

Those products include:

- Measured Drawings
- Large Format Photographs
- Written Data

These standards are as originally published in the *Federal Register* on September 29, 1983 except that the Recommended Sources of Technical Information and Annotated Bibliography contained in the notice of 1983 have been updated to reflect current availability of publications and other printed materials. These standards are not intended to be used alone but in conjunction with guidelines and other publications listed in the bibliography included here.

These standards will be used to produce for the following reasons, documentation that meets HABS/HAER standards:

- In preparing mitigation documentation in accordance with the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.).
- In preparing documentation to be donated to the HABS/HAER collection.
- In preparing documentation as part of a HABS/HAER recording project.

Additional information concerning the HABS/HAER program is available by writing the Chief, HABS/HAER Division, National Park Service, P.O. Box 37127, Washington, D.C. 20013-7127.

Robert J. Kapsch
Chief
Historic American Buildings Survey/
Historic American Engineering Record
National Park Service

**SECRETARY OF THE INTERIOR'S STANDARDS
for
ARCHITECTURAL AND ENGINEERING DOCUMENTATION¹**

These standards concern the development of documentation for historic buildings, sites, structures, and objects. This documentation, which usually consists of measured drawings, photographs, and written data, provides important information on a property's significance for use by scholars, researchers, preservationists, architects, engineers, and others interested in preserving and understanding historic properties. Documentation permits accurate repair or reconstruction of parts of a property, records existing conditions for easements, or may preserve information about a property that is to be demolished.

These standards are intended for use in developing documentation to be included in the Historic American Building Survey (HABS) and the Historic American Engineering Record (HAER) Collections in the Library of Congress. HABS/HAER in the National Park Service, have defined specific requirements for meeting these Standards for their collections. The HABS/HAER requirements include information important to development of documentation for other purposes such as State or local archives.

Standard I. Documentation Shall Adequately Explicate and Illustrate What is Significant or Valuable About the Historic Building, Site, Structure or Object Being Documented.

The historic significance of the building, site, structure or object identified in the evaluation process should be conveyed by the drawings, photographs and other materials that comprise documentation. The historical, architectural, engineering or cultural values of the property together with the purpose of the documentation activity determine the level and methods of documentation. Documentation prepared for submission to the Library of Congress must meet the HABS/HAER Guidelines.

Standard II. Documentation Shall be Prepared Accurately From Reliable Sources With Limitations Clearly Stated to Permit Independent Verification of the Information.

The purpose of documentation is to preserve an accurate record of historic properties that can be used in research and other preservation activities. To serve these purposes, the documentation must include information that permits assessment of its reliability.

Standard III. Documentation Shall be Prepared on Materials That are Readily Reproducible, Durable and in Standard Sizes.

The size and quality of documentation materials are important factors in the preservation of information for future use. Selection of materials should be based on the length of time expected for storage, the anticipated frequency of use and a size convenient for storage.

Standard IV. Documentation Shall be Clearly and Concisely Produced.

In order for documentation to be useful for future research, written materials must be legible and understandable, and graphic materials must contain scale information and location references.

¹ *Federal Register*, Vol. 48, No. 190, Thursday, September 29, 1983, pp. 44730-44731.

SECRETARY OF THE INTERIOR'S GUIDELINES for ARCHITECTURAL AND ENGINEERING DOCUMENTATION²

Introduction

These Guidelines link the Standards for Architectural and Engineering Documentation with more specific guidance and technical information. They describe one approach to meeting the Standards for Architectural Engineering Documentation. Agencies, organizations or individuals proposing to approach documentation differently may wish to review their approaches with the National Park Service.

The Guidelines are organized as follows:

- Definitions
- Goal of Documentation
- The HABS/HAER Collections
- Standard I: Content
- Standard II: Quality
- Standard III: Materials
- Standard IV: Presentation
- Architectural and Engineering Documentation
 - Prepared for Other Purposes
- Recommended Sources of Technical Information
 - and Annotated Bibliography

Definitions

These definitions are used in conjunction with these Guidelines:

- Architectural Data Form-a one page HABS form intended to provide identifying information for accompanying HABS documentation.
- Documentation-measured drawings, photographs, histories, inventory cards or other media that depict historic buildings, sites, structures or objects.
- Field Photography-photography other than large-format photography, intended for the purpose of producing documentation, usually 35mm.
- Field Records-notes of measurements taken, field photographs and other recorded information intended for the purpose of producing documentation.

² *Federal Register*, Vol. 48, No. 190, Thursday, September 29, 1983, pp.44731-34.

- Inventory Card-a one page form which includes written data, a sketched site plan and a 35mm contact print drymounted on the form. The negative with a separate contact sheet and index should be included with the inventory card.
- Large Format Photographs-photographs taken of historic buildings, sites, structures or objects where the negative is a 4 X 5", 5 X 7" or 8 X 10" size and where the photograph is taken with appropriate means to correct perspective distortion.
- Measured Drawings-drawings produced on HABS or HAER formats depicting existing conditions or other relevant features of historic buildings, sites, structures or objects. Measured drawings are usually produced in ink on archivally stable material, such as mylar.
- Photocopy-A photograph, with large-format negative, of a photograph or drawing.
- Select Existing Drawings-drawings of historic buildings, sites, structures or objects, whether original construction or later alteration drawings that portray or depict the historic value or significance.
- Sketch Plan-a floor plan, generally not to exact scale although often drawn from measurements, where the features are shown in proper relation and proportion to one another.

Goal of Documentation

The Historic American Buildings Survey (HABS) and Historic American Engineering Record (HAER) are the national historical architectural and engineering documentation programs of the National Park Service that promote documentation incorporated into the HABS/HAER collections in the Library of Congress. The goal of the collections is to provide architects, engineers, scholars, and interested members of the public with comprehensive documentation of buildings, sites, structures and objects significant in American history and the growth and development of the built environment.

The HABS/HAER Collections: HABS/HAER documentation usually consists of measured drawings, photographs and written data that provide a detailed record which reflects a property's significance. Measured drawings and properly executed photographs act as a form of insurance against fires and natural disasters by permitting the repair and, if necessary, reconstruction of historic structures damaged by such disasters. Documentation is used to provide the basis for enforcing preservation easement. In addition, documentation is often the last means of preservation of a property; when a property is to be demolished, its documentation provides future researchers access to valuable information that otherwise would be lost.

HABS/HAER documentation is developed in a number of ways. First and most usually, the National Park Service employs summer teams of student architects, engineers, historians, and architectural historians to develop HABS/HAER documentation, under the supervision of National Park Service professionals. Second, the National Park Service produces HABS/HAER documentation in conjunction with restoration or other preservation treatment, of historic buildings managed by the National Park Service. Third, Federal agencies, pursuant to Section 110(b) of the National Historic Preservation Act, as amended, record those historic

properties to be demolished or substantially altered as a result of agency action or assisted action (referred to as mitigation projects). Fourth, individuals and organizations prepare documentation to HABS/HAER standards and donate that documentation to the HABS/HAER collections. For each of these programs, different Documentation Levels will be set.

The standards describe the fundamental principals of HABS/HAER documentation. They are supplemented by other material describing more specific guidelines, such as line weights for drawings, preferred techniques for architectural photography, and formats for written data. This technical information is found in the HABS/HAER Procedures Manual.

These guidelines include important information about developing documentation for State or local archives. The State Historic Preservation Officer or the State library should be consulted regarding archival requirements if the documentation will become part of their collections. In establishing archives, the important questions of durability and reproducibility should be considered in relation to the purposes of the collection.

Documentation prepared for the purpose of inclusion in the HABS/HAER collections must meet the requirements below. The HABS/HAER office of the National Park Service retains the right to refuse to accept documentation for inclusion in the HABS/HAER collections when that documentation does not meet HABS/HAER requirements, as specified below.

Standard I: Content

1. Requirement: *Documentation shall adequately explicate and illustrate what is significant or valuable about the historic building, site, structure or object being documented.*

2. Criteria: Documentation shall meet one of the following documentation levels to be considered adequate for inclusion in the HABS/HAER collections.

- a. Documentation Level I;
 - (1) Drawings: a full set of measured drawings depicting existing or historic conditions.
 - (2) Photographs: photographs with large-format negatives of exterior and interior views; photocopies with large-format negatives of select existing drawings or historic views where available.
 - (3) Written data: History and description.
- b. Documentation Level II;
 - (1) Drawings: select existing drawings, where available, should be photographed with large-format negatives or photographically reproduced on mylar.
 - (2) Photographs: photographs with large-format negatives of exterior and interior views, or historic views, where available.
 - (3) Written data: history and description.
- c. Documentation Level III;
 - (1) Drawings: sketch plan.
 - (2) Photographs: photographs with large-format negatives of exterior and interior views.
 - (3) Written data: architectural data form.

d. Documentation Level IV: HABS/HAER inventory card.

3. Test: Inspection of the documentation by HABS/HAER staff.

4. Commentary: The HABS/HAER office retains the right to refuse to accept any documentation on buildings, sites, structures or objects lacking historical significance. Generally, buildings, sites, structures or objects must be listed in, or eligible for listing in the National Register of Historic Places to be considered for inclusion in the HABS/HAER collections.

The kind and amount of documentation should be appropriate to the nature and significance of the buildings, site, structure or object being documented. For example, Documentation Level I would be inappropriate for a building that is a minor element of a historic district, notable only for streetscape context and scale. A full set of measured drawings for such a minor building would be expensive and would add little, if any, information to the HABS/HAER collections. Large format photography [Documentation Level III] would usually be adequate to record the significance of this type of building.

Similarly, the aspect of the property that is being documented should reflect the nature and significance of the building, site, structure or object being documented. For example, measured drawings of Dankmar Adler and Louis Sullivan's Auditorium Building in Chicago should indicate not only facades, floor plans and sections, but also the innovative structural and mechanical systems that were incorporated in that building. Large format photography of Gunston Hall in Fairfax County, Virginia, to take another example, should clearly show William Buckland's hand-carved moldings in the Palladian Room, as well as other views.

HABS/HAER documentation is usually in the form of measured drawings, photographs, written data. While the criteria in this section have addressed only these media, documentation need not be limited to them. Other media, such as films of industrial processes, can and have been used to document historic buildings, sites, structures or objects. If other media are to be used, the HABS/HAER office should be contacted before recording.

The actual selection of the appropriate documentation level will vary, as discussed above. For mitigation documentation projects, this level will be selected by the National Park Service Regional Office and communicated to the agency responsible for completing the documentation. Generally, Level I documentation is required for nationally significant buildings and structures, defined as National Historic Landmarks and the primary historic units of the National Park Service.

On occasion, factors other than significance will dictate the selection of another level of documentation. For example, if a rehabilitation of a property is planned, the owner may wish to have a full set of as-built drawings, even though the significance may indicate Level II documentation.

HABS Level I measured drawings usually depict existing conditions through the use of a site plan, floor plans, elevations, sections and construction details. HAER Level I measured drawings will frequently depict original conditions where adequate historical material exists, so as to illustrate manufacturing or engineering processes.

d. Documentation Level IV: HABS/HAER inventory card.

3. Test: Inspection of the documentation by HABS/HAER staff.

4. Commentary: The HABS/HAER office retains the right to refuse to accept any documentation on buildings, sites, structures or objects lacking historical significance. Generally, buildings, sites, structures or objects must be listed in, or eligible for listing in the National Register of Historic Places to be considered for inclusion in the HABS/HAER collections.

The kind and amount of documentation should be appropriate to the nature and significance of the buildings, site, structure or object being documented. For example, Documentation Level I would be inappropriate for a building that is a minor element of a historic district, notable only for streetscape context and scale. A full set of measured drawings for such a minor building would be expensive and would add little, if any, information to the HABS/HAER collections. Large format photography [Documentation Level III] would usually be adequate to record the significance of this type of building.

Similarly, the aspect of the property that is being documented should reflect the nature and significance of the building, site, structure or object being documented. For example, measured drawings of Dankmar Adler and Louis Sullivan's Auditorium Building in Chicago should indicate not only facades, floor plans and sections, but also the innovative structural and mechanical systems that were incorporated in that building. Large format photography of Gunston Hall in Fairfax County, Virginia, to take another example, should clearly show William Buckland's hand-carved moldings in the Palladian Room, as well as other views.

HABS/HAER documentation is usually in the form of measured drawings, photographs, written data. While the criteria in this section have addressed only these media, documentation need not be limited to them. Other media, such as films of industrial processes, can and have been used to document historic buildings, sites, structures or objects. If other media are to be used, the HABS/HAER office should be contacted before recording.

The actual selection of the appropriate documentation level will vary, as discussed above. For mitigation documentation projects, this level will be selected by the National Park Service Regional Office and communicated to the agency responsible for completing the documentation. Generally, Level I documentation is required for nationally significant buildings and structures, defined as National Historic Landmarks and the primary historic units of the National Park Service.

On occasion, factors other than significance will dictate the selection of another level of documentation. For example, if a rehabilitation of a property is planned, the owner may wish to have a full set of as-built drawings, even though the significance may indicate Level II documentation.

HABS Level I measured drawings usually depict existing conditions through the use of a site plan, floor plans, elevations, sections and construction details. HAER Level I measured drawings will frequently depict original conditions where adequate historical material exists, so as to illustrate manufacturing or engineering processes.

Level II documentation differs from Level I by substituting copies of existing drawings, either original or alteration drawings, for recently executed measured drawings. If this is done, the drawings must meet HABS/HAER requirements outlined below. While existing drawings are rarely as suitable as-built drawings, they are adequate in many cases for documentation purposes. Only when the desirability of having as-built drawings is clear are Level I measured drawings required in addition to existing drawings. If existing drawings are housed in an accessible collection and cared for archivally, their reproduction for HABS/HAER may not be necessary. In other cases, Level I measured drawings are required in the absence of existing drawings.

Level III documentation requires a sketch plan if it helps to explain the structure. The architectural data form should supplement the photographs by explaining what is not readily visible.

Level IV documentation consists of completed HABS/HAER inventory cards. This level of documentation, unlike the other three levels, is rarely considered adequate documentation for the HABS/HAER collections but is undertaken to identify historic resources in a given area prior to additional, more comprehensive documentation.

Standard II: Quality

1. Requirement: *HABS and HAER documentation shall be prepared accurately from reliable sources with limitations clearly stated to permit independent verification of information.*

2. Criteria: For all levels of documentation, the following quality standards shall be met:

a. Measured drawings: Measured drawings shall be produced from recorded, accurate measurements. Portions of the building that were not accessible for measurement should not be drawn on the measured drawings but clearly labeled as not accessible or drawn from available construction drawings and other sources and so identified. No part of the measured drawings shall be produced from hypothesis or non-measurement related activities. Documentation Level I measured drawings shall be accompanied by a set of field notebooks in which the measurements were first recorded. Other drawings prepared for Documentation Levels II and III, shall include a statement describing where the original drawings are located.

b. Large format photographs: Large format photographs shall clearly depict the appearance of the property and areas of significance of the recorded building, site, structure or object. Each view shall be perspective-corrected and fully captioned.

c. Written history: Written history and description for Documentation Levels I and II shall be based on primary sources to the greatest extent possible. For Levels III and IV, secondary sources may provide adequate information; if not, primary research will be necessary. A frank assessment of the reliability and limitations of sources shall be included. Within the written history, statements shall be footnoted as to their sources, where appropriate. The written data shall include a methodology section specifying name of researcher, date of research, sources searched, and limitations of the project.

3. Test: Inspection of the documentation by HABS/HAER staff.

4. Commentary: The reliability of the HABS/HAER collections depends on documentation of high quality. Quality is not something that can be easily prescribed or quantified, but it derives from a process in which thoroughness and accuracy play a large part. The principle of independent verification of HABS/HAER documentation is critical to the HABS/HAER collections.

Standard III: Materials

1. Requirement: *HABS and HAER documentation shall be prepared on materials that are readily reproducible for ease of access; durable for long storage; and in standard sizes for ease of handling.*

2. Criteria: For all levels of documentation, the following material standards shall be met:

- a. Measured Drawings:
Readily Reproducible: Ink on translucent material.
Durable: Ink on archivally stable materials.
Standard Sizes: Two sizes: 19 X 24" or 24 X 36".
- b. Large Format Photographs:
Readily Reproducible: Prints shall accompany all negatives.
Durable: Photography must be archivally processed and stored. Negatives are required on safety film only. Resin-coated paper is not accepted. Color photography is not acceptable.
Standard Sizes: Three sizes: 4 X 5", 5 X 7", 8 X 10".
- c. Written History and Description:
Readily Reproducible: Clean copy for xeroxing.
Durable: Archival bond required.
Standard Sizes: 8½ X 11".
- d. Field Records:
Readily Reproducible: Field notebooks may be xeroxed. Photo identification sheet will accompany 35 mm negatives and contact sheets.
Durable: No requirement
Standard Sizes: Only requirement is that they can be made to fit into a 9½ X 12" archival folding file.

3. Test: Inspection of the documentation by HABS/HAER staff.

4. Commentary: All HABS/HAER records are intended for reproduction; some 20,000 HABS/HAER records are reproduced each year by the Library of Congress. Although field records are not intended for quality reproduction, it is intended that they be used to supplement the formal documentation. The basic durability performance standard for HABS/HAER records is 500 years. Ink on mylar is believed to meet this standard, while color photography, for example, does not. Field records do not meet this archival standard, but are maintain in the HABS/HAER collections as a courtesy to the collection user.

Standard IV: Preservation

1. Requirement: *HABS and HAER documentation shall be clearly and concisely produced.*

2. Criteria: For levels of documentation as indicated below, the following standards for presentation will be used:

- a. Measured Drawings: Level I measured drawings will be lettered mechanically (i.e., Leroy or similar) or in a handprinted equivalent style. Adequate dimensions shall be included on all sheets. Level III sketch plans should be neat and orderly.
- b. Large format photographs: Level I photographs shall include duplicate photographs that include a scale. Level II and III photographs shall include, at a minimum, at least one photograph with a scale, usually of the principal facade.
- c. Written history and description: Data shall be typewritten on bond, following accepted rules of grammar.

3. Test: Inspection of the documentation by HABS/HAER staff.

Architectural and Engineering Documentation Prepared for Other Purposes

Where a preservation planning process is in use, architectural and engineering documentation, like other treatment activities, are undertaken to achieve the goals identified by the preservation planning process. Documentation is deliberately selected as a treatment for properties evaluated as a significant, and the development of the documentation program for a property follows from the planning objectives.

Documentation efforts focus on the significant characteristics of the property, as defined in the previously completed evaluation. The selection of a level of documentation and the documentation techniques (measured drawings, photography, etc.) is based on the significance of the property and the management needs for which the documentation is being performed. For example, the kind and level of documentation required to record a historic property for easement purposes may be less detailed than that required as mitigation prior to destruction of the property. In the former case, essential documentation might be limited to the portions of the property controlled by the easement, for example, exterior facades; while in the latter case, significant interior architectural features and non-visible structural details would also be documented.

The principles and content of the HABS/HAER criteria may be used for guidance in creating documentation requirements for other archives. Levels of documentation and the durability and sizes of documentation may vary depending on the intended use and the repository. Accuracy of documentation should be controlled by assessing the reliability of all sources and making that assessment available in the archival record; by describing the limitations of the information available from research and physical examination of the property and by retaining the primary data (field measurements and notebooks) from which the archival record was produced. Usefulness of the documentation products depends on preparing the documentation on durable materials that are able to withstand handling and reproduction, and in sizes that can be stored and reproduced without damage.

Recommended Sources of Technical Information and Annotated Bibliography³

Recording Historic Structures is available through AIA Press, request publication #ISBN 1-55835-018-7 (hardcover - \$26.95) or #ISBN 1-55835-021-7 (softcover - \$19.95), plus \$3.00 shipping charge, and D.C. or Maryland sales tax, if applicable. AIA Order Department, 9 Jay Gould Court, P.O. Box 753, Waldorf, Maryland 20601.

Recording Historic Structures. John A. Burns, editor. Washington, D.C.: The AIA Press, 1989.

With over 200 photographs, drawings, illustrations, a bibliography, and an index, this handbook discusses each aspect of the documentation of historic structures, using examples from the HABS/HAER collection.

The following printed materials are available by writing to: HABS/HAER - National Park Service, P.O. Box 37127, Washington, D.C. 20013-7127. Please send check or money order made out to the U.S. Treasury, to cover the cost of reproduction and handling. Availability and price accurate as of June 1, 1990.

Guidelines for Recording Historic Ships. Richard K. Anderson, Jr. Washington, D.C.: Historic American Buildings Survey/Historic American Engineering Record, National Park Service, 1988. Free, limited quantity.

This document marks the revival of the 1930's Historic American Merchant Marine Survey and provides the definitive guide to maritime recording.

HABS Field Instructions for Measured Drawings. Washington, D.C.: Historic American Buildings Survey/Historic American Engineering Record, National Park Service, 1981. \$5.00 Gives procedures for producing measured drawings of historic buildings to HABS/HAER standards.

HABS Historian's Procedures Manual. Washington, D.C.: Historic American Buildings Survey/Historic American Engineering Record, National Park Service, 1983. \$2.00 Provides guidelines for producing written data on historic buildings to HABS/HAER standards.

HAER Field Instructions. Washington, D.C.: Historic American Buildings Survey/Historic American Engineering Record, National Park Service, 1981. \$5.00 Provides guidelines for documenting to HABS/HAER standards, historic engineering and industrial sites and structures with measured drawings and written data.

³The original recommended sources of technical information contained in the *Federal Register* notice of September 29, 1983 have been omitted since most are out of print and/or superceded. The above recommended sources of technical information represent information available and current as of 1990.

Specifications for the Production of Photographs. Washington, D.C.: Historic American Buildings Survey/Historic American Engineering Record, National Park Service, 1984. \$2.00
Provides criteria for the production of large format photographs for acceptance to the HABS/HAER collection.

Transmitting Documentation to HABS/HAER WASO. Washington, D.C.: Historic American Buildings Survey/Historic American Engineering Record, National Park Service, 1985. \$2.00

Provides transmittal procedures and archival requirements of documentation for acceptance to the HABS/HAER collection.

Industrial Eye is available from (request publication #ISBN 0-89133-124-7): Decatur House Museum Shop, 1600 H Street, NW, Washington, D.C. 20006. Please enclose a check or money order made out to the National Trust for \$34.95 plus \$3.00 for postage and handling.

Industrial Eye. Photographs by Jet Lowe from the Historic American Engineering Record. Washington, D.C.: National Trust for Historic Preservation, 1987.

Photographs of the county's engineering and industrial landmarks, illustrating the use of large format photography to document historic engineering works and interpret industrial processes. All photographs meet HABS/HAER standards.

A Record in Detail is available for \$34.95 plus \$2.50 postage and handling from:
University of Missouri Press, 200 Lewis Hall, Columbia, Missouri 65211.

A Record in Detail: The Architectural Photographs of Jack E. Boucher. Columbia: University of Missouri Press, 1988.

A selection of the works of HABS photographer Jack E. Boucher, demonstrating the effective use of large format photography to record historic buildings. All photographs meet HABS/HAER standards.

Architectural Graphic Standards, Eighth Edition. American Institute of Architects. New York: John Wiley & Sons, Inc., 1988.

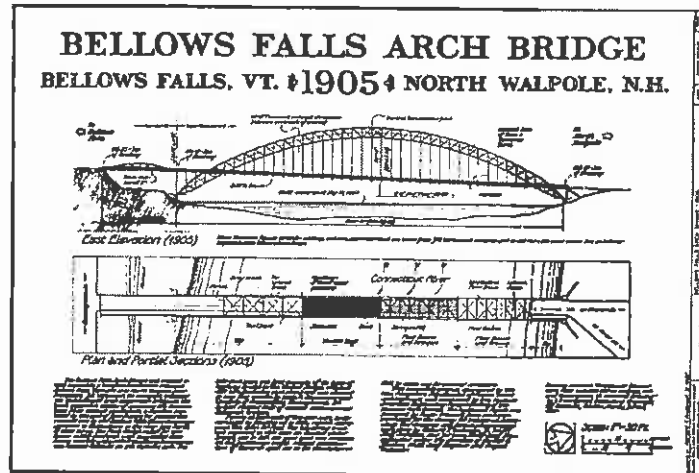
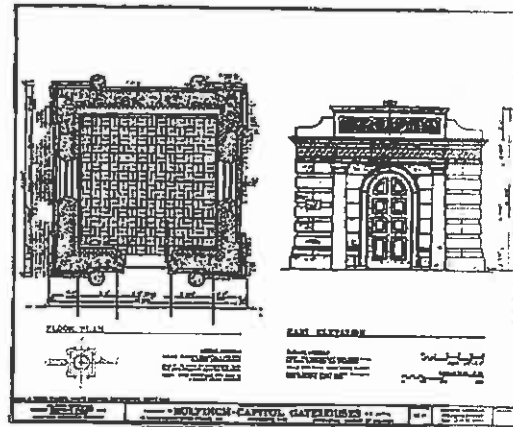
The standard reference for architectural information, this edition is the first to have a chapter on historic preservation, including four pages on HABS.

For further information about HABS/HAER contact:

Historic American Buildings Survey/
Historic American Engineering Record
National Park Service
P.O. Box 37127
Washington, D.C. 20013-7127

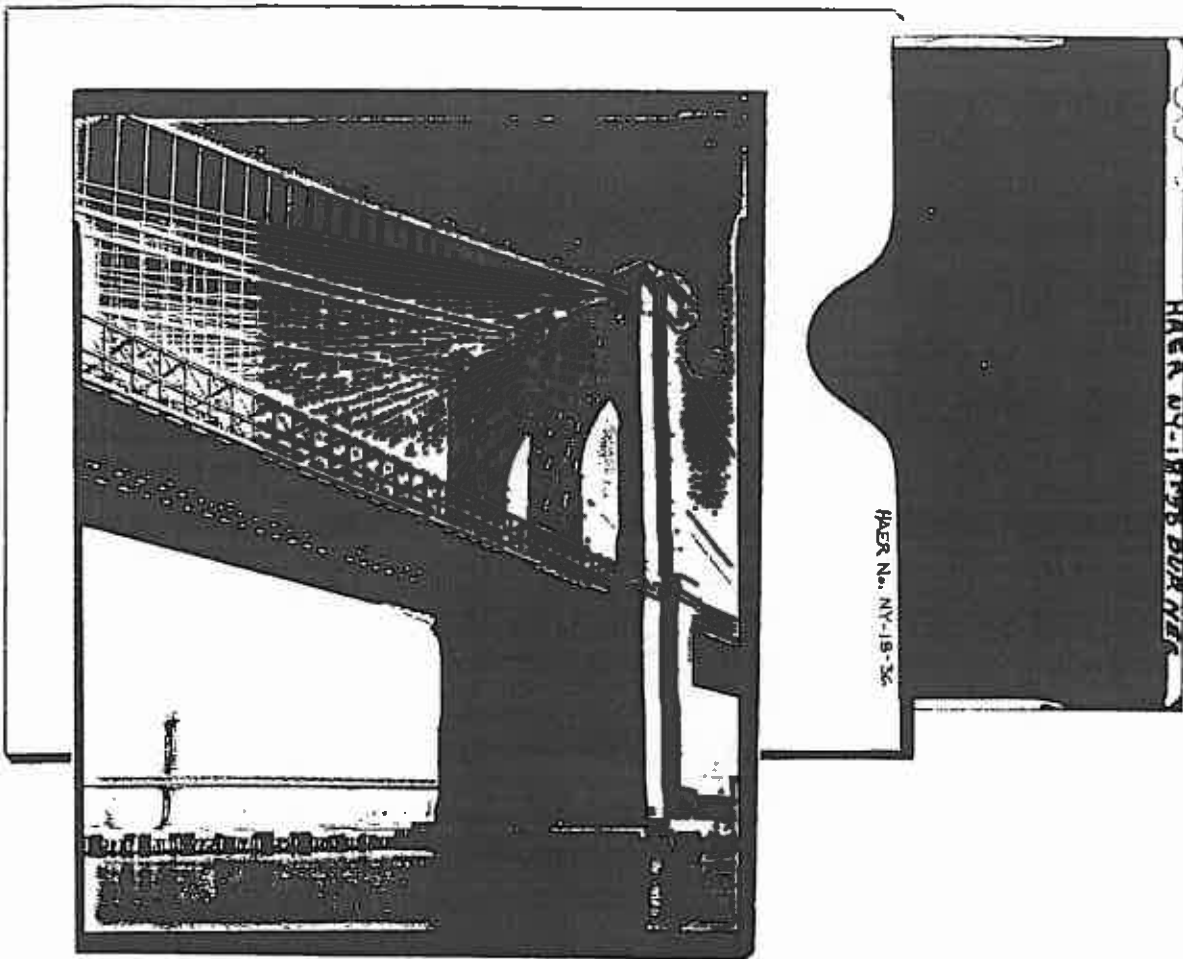
Appendices

Appendix A



Measured Drawings:

Measured drawings shall be produced from recorded, accurate measurements. Portions of the building that were not accessible for measurement should not be drawn on the measured drawing but clearly labeled as not accessible or drawn from available construction drawings and other sources and so identified. Since measured drawings must be readily reproducible and durable, HABS/HAER standards call for ink on translucent and archivally stable materials, such as mylar. As illustrated in the reductions above, drawings are produced in two standard sizes, 19 X 24" and 24 X 36".



Large Format Photographs:

HABS/HAER standards require that large format (cameras that produce 4 X 5", 5 X 7", or 8 X 10" negatives) photographic documentation be done with black and white film. A print must accompany each negative. The negatives and contact prints are archivally treated and the contact paper is fiber-based instead of resin-coated (RC). The paper and negatives must have had sufficiently long washings in water in order to remove all processing chemicals.

HISTORIC AMERICAN BUILDINGS SURVEY

JIMMY CARTER BOYHOOD HOME
(J.F. Plexico House) **HABS No. GA-245**

Location: North side of Old Plains Highway (Lebanon Cemetery Road), 2.3 miles west of Interstate 280 in the outskirts of a community called Archery, Sumter County, Georgia.

USGS Plains Georgia Quadrant, Universal Transverse Mercator Coordinates: Zone 18, N 3546000 E 742375.

Present Owner: Mrs. T. R. Downer.

Present Use: The home is unoccupied but is listed on the Plains tour and can be seen by passing motorists.

Significance: This was Jimmy Carter's childhood home from age 3 until he left Plains to attend college. The farm included a bungalow, commissary (see HABS No. GA-245-A), tenant houses (see HABS No. GA-245-B), a barn, several sheds, fields, and animal pens.

PART I. HISTORICAL INFORMATION

A. Physical History:

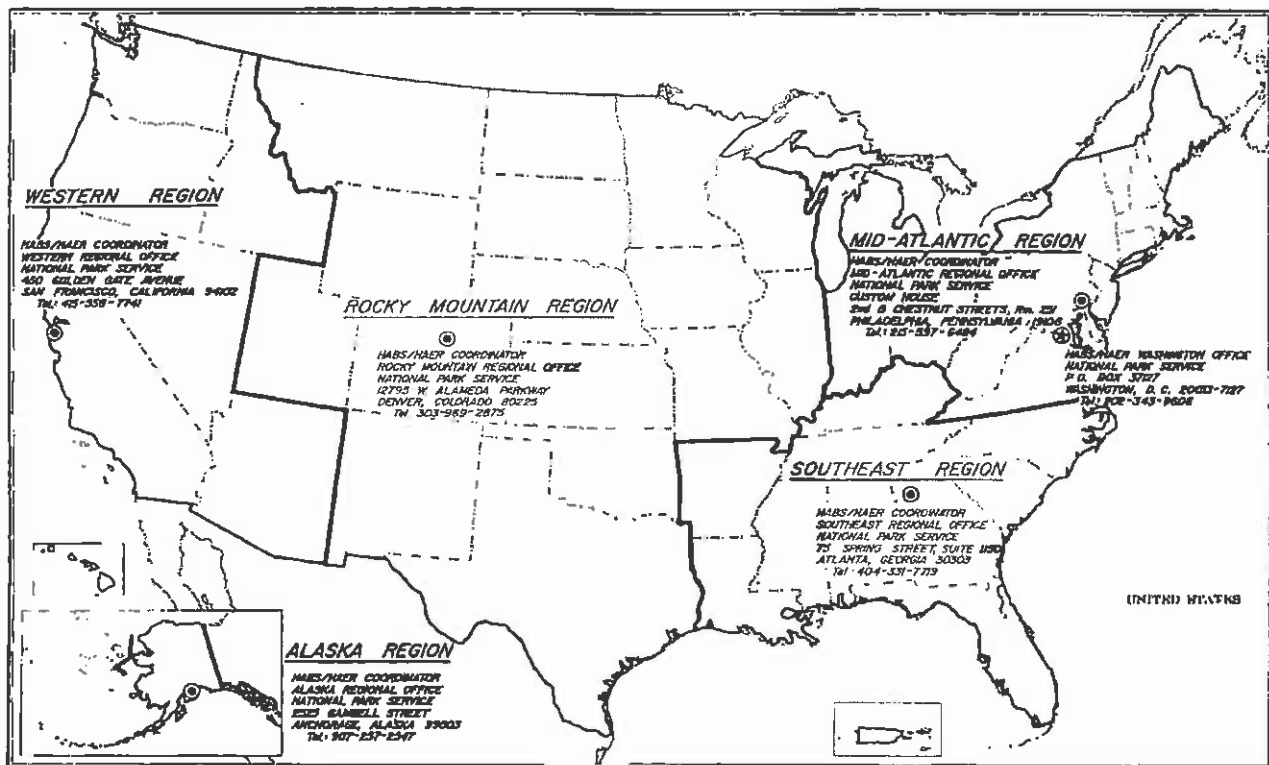
1. Date of erection: 1922 is the year that Perry Plexico, son of J.F. Plexico, said that his father purchased the property and built the house. Although the property was never actually sold to the senior Plexico, it was deeded to him in 1921 by a J.S. Plexico of Barnwell, South Carolina, as a security. The debt was not paid off until eleven days after the house was sold to the Carters. This suggests that J.S. Plexico did not live on the property and supports Perry Plexico's recollection that his father, J.F., gained possession of the property in the early 1920s.
2. Original and subsequent owners: The following is a chain of title to the land on which the building stands. Records are from the Clerk's Office, Sumter County Courthouse, Americus, Georgia.
1911 Deed December 1, 1911, recorded December 11, 1911. Deed Book KK, page 22. J. Passmore to J.S. Plexico for

Written History and Description:

Written history and description are based on primary sources to the greatest extent possible and should include an assessment of the reliability and limitations of the sources. Within the written history, statements shall be footnoted as to their sources, where appropriate. The written data shall include a methodology section specifying the name of the researcher, date of research, sources researched, and limitations of the project. The histories will be submitted on 8½ X 11" archival bond.

MITIGATIVE DOCUMENTATION PROGRAM

Under the provisions of the amended National Historic Preservation Act, Federal agencies are required to produce documentation to HABS/HAER standards on buildings, structures, sites, and objects that are listed in or eligible for listing in the National Register of Historic Places and that are threatened with demolition or substantial alteration by projects with Federal involvement. The five National Park Service regional offices charged with external historic preservation responsibilities administer the HABS/HAER mitigative documentation program. The actual work is usually conducted by contractors and supervised by the responsible Federal agency. The documentation produced is reviewed by the regional coordinator and transmitted to the HABS/HAER Washington office for inclusion in the HABS/HAER collections at the Library of Congress.



SUMMARY

PERFORMANCE STANDARDS OF THE HISTORIC AMERICAN BUILDINGS SURVEY/HISTORIC AMERICAN ENGINEERING RECORD (HABS/HAER)
(SECRETARY OF THE INTERIOR'S STANDARDS FOR ARCHITECTURAL AND ENGINEERING DOCUMENTATION, FEDERAL REGISTER, SEPTEMBER 29, 1993, PP. 41730-41734)

STANDARDS	I. CONTENT				II. QUALITY				III. MATERIALS				IV. PRESENTATION										
REQUIREMENTS	"DOCUMENTATION SHALL ADEQUATELY EXPLICATE AND ILLUSTRATE WHAT IS SIGNIFICANT OR VALUABLE ABOUT THE HISTORIC BUILDING, SITE STRUCTURE OR OBJECT BEING DOCUMENTED."				"HABS AND HAER DOCUMENTATION SHALL BE PREPARED ACCURATELY FROM RELIABLE SOURCES WITH LIMITATIONS CLEARLY STATED TO PERMIT INDEPENDENT VERIFICATION OF INFORMATION."				"HABS AND HAER DOCUMENTATION SHALL BE PREPARED ON MATERIALS THAT ARE READILY REPRODUCIBLE FOR EASE OF ACCESS, DURABLE FOR LONG STORAGE, AND IN STANDARD SIZES FOR EASE OF HANDLING."				"HABS AND HAER DOCUMENTATION SHALL BE CLEARLY AND CONSPICUOUSLY PRODUCED."										
CRITERIA	LEVEL																						
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV							
A. MEASURED DRAWING	FULL SET OF MEAS. DWGS.	SEE PHOTOS BELOW	SKETCH PLAN	INVENTORY CARD	MEASURED DRAWINGS ARE TO BE PRODUCED FROM RECORDED, ACCURATE MEASUREMENTS. THOSE PORTIONS DRAWN FROM EXISTING DRAWINGS OR OTHER SOURCES SHOULD BE SO IDENTIFIED AND SOURCES LISTED.				INK ON TRANSFERABLE MATERIAL	8x10" PHOTO-COPY	INK ON BOND PAPER	INK ON ARCHIVAL CARD	MEAS. LETTERING OR EQUIVALENT	ADEQUATE DIMENSIONS ON ALL SHEETS									
	LARGE FORMAT PHOTOGRAPHS EXTERIOR & INTERIOR	LARGE FORMAT PHOTOGRAPHS EXTERIOR & INTERIOR	35mm SLW		PHOTOGRAPHS SHALL CLEARLY DEPICT THE APPEARANCE OF THE PROPERTY AND AREAS OF SIGNIFICANCE. ALL VIEWS ARE TO BE PERSPECTIVE-CORRECTED AND FULLY CAPTIONED.				INK ON ARCHIVALLY STABLE MATERIAL	8x10" PHOTO-COPY	6 1/2 x 11" PHOTO-COPY	UNIVERSITY CARD	MIN. OF ONE PHOTO WITH A SCALE (PRINCIPAL FACADE)										
B. PHOTOGRAPHS	LARGE FORMAT PHOTOGRAPHS EXTERIOR & INTERIOR	LARGE FORMAT PHOTOGRAPHS EXTERIOR & INTERIOR	35mm SLW		PHOTOGRAPHS SHALL CLEARLY DEPICT THE APPEARANCE OF THE PROPERTY AND AREAS OF SIGNIFICANCE. ALL VIEWS ARE TO BE PERSPECTIVE-CORRECTED AND FULLY CAPTIONED.				PRINTS SHALL ACCOMPANY ALL NEGATIVES MUST BE ARCHIVALLY PROCESSED, NO HC PAPER	4x5" OR 5x7" OR 8x10"	35mm FILM		DUPLICATE PHOTOS WITH A SCALE STICK										
	HISTORY AND DESCRIPTION IN NARRATIVE OR OUTLINE FORMAT	ONE PAGE SUMMARY	INVENTORY CARD		BASED ON PRIMARY SOURCES INCLUDE: — METHODOLOGY — NAME OF RESEARCH & DATE OF RESEARCH — SOURCES — FRANK ASSESSMENT OF SOURCES AND THEIR LIMITATIONS				CLEAN COPY FOR XEROXING	ARCHIVAL BOND REQUIRED	8 1/2 x 11"		TYPEWRITTEN ON BOND										
D. OTHER	OTHER MEDIA CAN AND HAVE BEEN USED. CONTACT HABS/HAER OFFICE BEFORE EMPLOYING A MEDIA OTHER THAN THOSE SPECIFIED ABOVE.																						
TESTS	INSPECTION BY HABS/HAER OFFICE STAFF. DOCUMENTATION NOT MEETING HABS/HAER STANDARDS WILL BE REFUSED.																						
COMMENTARIES	KIND AND AMOUNT OF DOCUMENTATION SHOULD BE APPROPRIATE TO THE NATURE, AND SIGNIFICANCE OF THE BUILDING, SITE, STRUCTURE OR OBJECT BEING DOCUMENTED.				THE PRINCIPLE OF INDEPENDENT VERIFICATION IS CRITICAL IN ASSURING HIGH QUALITY OF HABS/HAER MATERIALS.				BASIC DURABILITY PERFORMANCE STANDARD IS 500 YEARS.				HABS/HAER ARE MOST WIDELY USED OF SPECIAL COLLECTIONS AT THE LIBRARY OF CONGRESS.										

Robert J. Kapsch - from the Association for Preservation Technology Bulletin Vol. XXII No. 1/2 1990, p.32.

